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DELAWARE RIVER BASIN. ZONE 1. A COOPERATIVE STATE-FEDERAL REPORT ON WATER POLLUTION CONTROL

Public Health Service
New York, New York

January 1954

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DELAWARE RIVER BASIN

ZONE I

A Cooperative State-Federal Report on Water Pollution Control

NEW JERSEY
Department of Health
NEW YORK
Water Pollution Control Board
Department of Health
PENNSYLVANIA
Sanitary Water Board
Department of Health
THE INTERSTATE COMMISSION
ON THE DELAWARE RIVER BASIN

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U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service
North Atlantic Drainage Basins

112

REPORT ON WATER POLLUTION CONTROL

DELAWARE RIVER BASIN - ZONE 1

Prepared by

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Division of Water Pollution Control
North Atlantic Drainage Basins Office

January 1954

In cooperation with the:

New Jersey State Department of Health
Water Pollution Control Board, New York State Department of Health
Sanitary Water Board, Pennsylvania Department of Health
Interstate Commission on the Delaware River Basin

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INTRODUCTION

The Federal Water Pollution Control Act, Public Law 845, passed by the 80th Congress in June of 1948, provides for full recognition of the primary responsibilities and rights of the States in controlling water pollution. It requires the Surgeon General of the Public Health Service to cooperate with other Federal agencies, with State and interstate water pollution control agencies, and with municipalities and industries in the preparation or adoption of comprehensive programs for eliminating or reducing the pollution of interstate waters and tributaries thereof, and improving the sanitary condition of surface and underground waters.

In developing these programs, due regard must be given to improvements necessary to conserve the Nation's waters for public water supplies, propagation of fish and aquatic life, recreational purposes, agricultural, industrial, and other legitimate uses.

As a first step in carrying out this requirement, the data available as of July 1, 1950, were presented in summary type reports covering the major drainage basins in the United States, the data concerning the Delaware River Basin being presented briefly in the summary report on the North Atlantic Drainage Basins. The summary report considered the water pollution problems of the Delaware River Basin as a whole.

This report contains pollution data available as of January 1954 and relates to water pollution control measures in Zone 1 of the Delaware River Basin (that portion above Trenton, New Jersey). It is the fourth of a series of five such reports which together cover the entire Delaware River Basin. Previously published reports in the series are:

Report on Water Pollution Control - Delaware River Basin, Zone 3
(Exclusive of the Schuylkill River Basin)
Water Pollution Series No. 41, PHS Publication No. 239, May 1952.

Report on Water Pollution Control - Delaware River Basin, Zone 2
Water Pollution Series No. 48, PHS Publication No. 273, Sept. 1952.

Report on Water Pollution Control - Delaware River Basin, Zone 4
Water Pollution Series No. 58, PHS Publication No. 295, April 1953.

The last in the group, the report on the Schuylkill River Basin, is presently under preparation.

Water pollution control in this region has been given considerable study by the water pollution control agencies of the four States of New York, New Jersey, Pennsylvania and Delaware charged with this administrative responsibility, and the Interstate Commission on the Delaware River Basin (Incodel), a joint cooperative agency maintained by the four states. Pollution control activities of these agencies of the States are supported by their respective State laws relating to intrastate water pollution and the Incodel laws which have been passed by each of the States in the form of reciprocal legislation for the control of the interstate Delaware River and its tributaries.

The Incodel laws enacted; New Jersey - Chapter 146, July 1, 1939; New York - Chapter 600, May 31, 1939; Delaware - Chapter 93, May 8, 1941; and Pennsylvania - Chapter 123, April 19, 1945; provide for the minimum degree of treatment of wastes discharged in each of four zones of the interstate Delaware River. The zones established under these acts and the principal water uses designated are as follows:

ZONE 1: Zone 1 is that part of the Delaware River and its West Branch extending from the New York-Pennsylvania boundary line to the head of tidewater at Trenton, New Jersey and Morrisville, Pennsylvania.

The drainage basin contributory to this zone, excepting part of the Lehigh River Basin, is relatively sparsely inhabited and contains few sewered communities and relatively few industrial establishments producing waste water. The streams draining this area being, in general, relatively clean and of high elevation, are well adapted as sources of public water supplies, after treatment or purification.

The principal uses of the waters of the Delaware River in Zone 1 are expected to be for water supply after such treatment or purification as may be necessary, and for recreation, bathing, maintenance of fish and aquatic life, agriculture, and for other related purposes.

ZONE 2: Zone 2 is that part of the Delaware River extending from the head of tidewater at Trenton, New Jersey and Morrisville, Pennsylvania to a line drawn perpendicular to the channel of the Delaware River from the mouth of Pennypack Creek in Philadelphia, Pennsylvania, to the corresponding point on the New Jersey shore.

The drainage basin contributory to this zone is somewhat more densely populated than that of Zone 1, and it contains more sewered communities and industrial establishments.

The principal uses of the waters of the Delaware River in Zone 2 are expected to be for water supply, after treatment or purification, and for recreation, navigation, maintenance of fish and aquatic life, agricultural, industrial and other purposes.

ZONE 3: Zone 3 is that part of the Delaware River extending from the aforesaid line connecting the mouth of Pennypack Creek in Philadelphia and the corresponding point in New Jersey to the Pennsylvania-Delaware boundary line.

The drainage basin contributory to this zone contains populous metropolitan areas including Philadelphia, Pennsylvania and Camden, New Jersey.

The principal uses of the waters of the Delaware River in Zone 3 are expected to be for navigation, industrial water supply, and other purposes. The water in this zone, however, should be of such sanitary quality that it will not be harmful to fish life, and will not adversely affect the quality of the waters of the tidal tributaries.

ZONE 4: Zone 4 is that part of the Delaware River extending from the Pennsylvania-Delaware boundary line to the Atlantic Ocean.

The principal uses of the waters of the Delaware River in Zone 4 are expected to be for navigation, industrial water supplies, commercial fishing, shellfish culture, recreation and other purposes.

This report describes the status as of January 1954 of the comprehensive water pollution control programs conducted by the New Jersey State Department of Health, the New York State Department of Health and its Water Pollution Control Board, the Sanitary Water Board of the Pennsylvania Department of Health and the Interstate Commission on the Delaware River Basin in that portion of the drainage area contributory to Zone 1 of the Delaware River. It sets forth information about the ways the water resources of the area are used, the pollution entering those water resources and the resulting damages, the benefits which may result from pollution prevention and abatement, pollution prevention measures in effect, and those which appear to be needed. Its scope is limited to surface water pollution control. Ground water pollution has not been considered in the report although usage of ground water is mentioned. While it is true that additional information is needed to complete the program, the objectives have been established and general plans for attaining them have been adopted by the States and Incodel.

The program is about completed in New Jersey for all significant pollution sources, with concentration now being placed on the maintenance of facilities. In the case of New York, objectives have been clearly established on the West Branch of the Delaware as set forth in the Incodel Act, however, the tributary streams have yet to receive their classifications under the terms of the New York Water Pollution Control Act. In dealing with new pollution sources, increases of pollution from old sources, and pollution from private resorts, the State Department of Health has set forth treatment requirements for each particular instance as the situation arose. The Pennsylvania program is well advanced toward completion particularly in the lower Lehigh area. The problem remaining is largely the cleanup of pollution from small communities. Also some larger discharges into streams affected by acid mine drainage need correction.

The data on which this report is based have been compiled through the New Jersey State Department of Health, the New York State Department of Health and its Water Pollution Control Board, the Sanitary Water Board of the Pennsylvania Department of Health and Incodel. Through these agencies additional data have been obtained from other State officials, municipal officials, and representatives of industry. Federal agencies also have cooperated.

The detailed data and remarks relating to individual sources of pollution appearing in Basic Data Tables 1 and 2 are the determination of the State water pollution control agencies and are included to illustrate the status of the program as of January 1954.

Comprehensive programs for pollution control must necessarily be fluid. They must allow for growth, development and changing conditions. The program

now in effect in this area appears to fit the current needs. Reappraisal in the course of time will provide for adjustments as the need arises.

A sincere effort has been made by all who contributed to this report to present a fair picture of the complex water pollution problems in the Delaware River Basin - Zone 1, and to present reasonable conclusions and recommendations. It is our hope that this report will help in safeguarding the water resources in this area.

ACKNOWLEDGMENTS

The Public Health Service wishes to acknowledge the cooperation and assistance of those agencies and individuals that have contributed to the preparation of this report.

The New Jersey State Department of Health, the New York State Department of Health and its Water Pollution Control Board, and the Sanitary Water Board of the Pennsylvania Department of Health have furnished the data from which the various tables were prepared and other data and information contained in the narrative statements. The Interstate Commission on the Delaware River Basin also supplied considerable data and assisted in drafting portions of the report. These agencies have, in addition, reviewed the preliminary draft of the report and offered valuable comments and suggested changes. In general, the preliminary draft has been revised so that this report is in agreement with the comments and suggestions of the participating State and interstate agencies.

Federal agencies from which assistance was obtained include the Corps of Engineers, Department of the Army; the Geological Survey, Fish and Wildlife Service and Bureau of Mines, Department of the Interior; the Department of Commerce; the Department of Agriculture; and the Federal Power Commission. The report was reviewed and cleared by the Federal Inter-agency River Basin Committee.

Finally, there is acknowledged the assistance of other State and Federal agencies and individuals interested in water resources development and conservation that have contributed information through other sources than those listed above.

SUMMARY

The area designated as Zone 1 of the Delaware River is that part of the Delaware River and its West Branch extending from the New York-Pennsylvania boundary line to the head of tidewater at Trenton, New Jersey. This report considers the entire contributory drainage area inasmuch as discharges within any portion may affect the quality of water in Zone 1. The drainage area contributory to this section is about 6,852 square miles or approximately 54 percent of the entire Delaware River Basin. This region includes all or major portions of Mercer, Sussex and Warren Counties in New Jersey; Delaware and Sullivan Counties in New York; Carbon, Lehigh, Monroe, Northampton, Pike and Wayne Counties in Pennsylvania; and minor parts of adjacent counties in all three States.

The 1950 population of the basin was approximately 822,700, an increase of about 9.1 percent since 1940. Of this number about 378,000 are concentrated in and around the Lehigh Valley in Pennsylvania. In the summer months, there is a great influx of vacationists into the extensive resort areas of New York and Pennsylvania which causes a large temporary increase in population.

Industry is centered near the anthracite coal resources in the Lehigh Valley, particularly the Allentown-Bethlehem-Easton area. Steel production, quarrying, coal mining, cement making and textile production are the leading industries of this section. The rest of the basin is practically devoid of manufacturing and is devoted to agriculture, dairying and recreational activity.

The principal uses of the Upper Delaware River as designated by the Incodel agreement are for water supply, after such treatment or purification as may be necessary, and for recreation, bathing, maintenance of fish and aquatic life, agriculture and other related purposes. It has been estimated that by 1980 two billion gallons of water daily may be required from the Delaware and its tributaries to meet municipal demands, with the supply to come principally from headwater reservoir developments. This amount would satisfy the potential future needs of New York City, northern New Jersey and the Philadelphia-Camden area. There are at present 83 mgd (million gallons per day) supplied to 557,000 people in the basin by 92 water systems. In addition New York City has been authorized by the U. S. Supreme Court to withdraw 440 mgd from tributaries for additional water supply. This water will be totally diverted from the watershed, in contrast to the partial diversions by other water users wherein it is returned after use and is available for reuse downstream. It is expected that the City will start operation of the Neversink Reservoir early in 1954 to supply 105 mgd and will complete its Pepacton Reservoir on the East Branch by 1956 which will yield an additional 335 mgd.

Upon leaving the area covered by this report, the Delaware provides the very life blood to the Trenton area and the rapidly growing industrial area around U. S. Steel's Fairless Works, half the municipal supply of Philadelphia and water supply to numerous industries along the river. The results of a survey of industrial water use conducted by Incodel in 1951 indicate that establishments between Trenton and Wilmington use over three billion gallons per day drawn from the Delaware River, most of which is returned for reuse downstream.

The mountains, lakes and streams of this vacationland provide recreation conveniently accessible to well over 10 percent of the U. S. population. Thousands of hotels, camps and summer cottages are scattered throughout the Catskill and Pocono regions catering to vacation seekers and providing facilities for fishing, hunting, swimming and other sports.

Several plans for the utilization of the waters of the Upper Delaware Basin have been proposed but none have crystalized except for the first stage of the New York City water supply development. The Incodel Plan for integrated development of water supply and flow regulation of the entire Delaware Basin has been found to be unacceptable by Pennsylvania. New York and New Jersey have approved the Incodel Plan, but New Jersey has also cleared the way for a joint venture with Pennsylvania for a reservoir on the Delaware. New York City, still seeking to expand its water supply, has petitioned the Supreme Court to allow an additional diversion of water from the Delaware tributaries. All the States and Incodel do agree, however, that no hydro-electric or other development should be permitted on the Delaware that would jeopardize any future water supply development.

The streams of Zone 1 receive the waste waters discharged from 287 municipal sewer systems* which serve a population of approximately 473,000. The vast majority of these systems serve only hotels and other resorts which operate during the summer season, most of which discharge their effluent to streams only after treatment by sand filtration and chlorination. Also included are a large number of unsewered communities in New York and Pennsylvania in which pollution problems exist. Altogether there are 214 municipal sewage treatment plants in operation serving about 419,000 population -- 89 percent of the sewered population. The raw wastes from 73 municipal sewer systems serving some 54,100 population are now discharged untreated to the watercourses of the area.

Wastes from 83 industries, some with and some without treatment, are discharged directly to the streams of the Upper Delaware Basin. Of this number 70 discharge organic wastes and the remaining 13 discharge wastes of an inorganic nature. Most of the industrial plants discharging wastes are concentrated in the Lehigh Valley, except for numerous small dairies in New York State. Waste treatment facilities are in operation at 53 of these industries, while 30 plants discharge their wastes untreated.

New construction completed since World War II has relieved almost all of the more significant pollution conditions that were previously existing in the basin. In all, 138 municipal sewage treatment plants and 21 industrial waste treatment facilities have been built. Not included in this number are the many industries which have corrected their pollution problems by sub-surface disposal, or connection to municipal sewer systems.

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers or other population centers.

The entire Delaware Basin north of Trenton is generally clean and relatively unpolluted except for certain localized areas. Former pollution conditions that existed on the lower Lehigh River and on the Delaware below Port Jervis and below Easton have been corrected to a large extent. In past years the effects of pollution from this area have caused troublesome water treatment problems at the Trenton water supply and occasionally even endangered water supplies as far downstream as Philadelphia. The vastly improved condition of the Lehigh and the return of fishing and other recreation exemplifies the benefits that may be achieved from pollution prevention and abatement.

New or improved waste treatment facilities are still needed for 91 municipal sewer systems serving about 100,200 population and for 38 industrial plants. Much progress is underway to abate this pollution. Facilities now in the final planning stage or already under construction will satisfy the need of 41 municipalities with 56,700 population. An additional 14 municipalities with 33,900 population are in preliminary planning stages. The remaining 36 discharges of sewage from only 9,600 population are for the most part in small unsewered communities in New York and Pennsylvania. The industrial picture indicates that 5 of the needed facilities are under construction or in the final planning stage, and 17 other industries are doing preliminary planning.

The municipalities and industries needing improvements as of January 1954 for abatement of pollution are set forth in Table J. Basic data as of this same date on the sources of municipal and industrial pollution appear in Tables 1 and 2 of the Appendixes.

The water quality requirements for Zone 1 of the interstate Delaware River and minimum treatment requirements for wastes discharged thereto are set forth in the Incodel Act. (See Pollution Prevention Measures in Effect.) In general they require 85% reduction of BOD with a maximum of 50 ppm of BOD permitted, no more than 5% depletion in dissolved oxygen present and elimination of toxic materials. On its tributary streams Pennsylvania has established standards which require complete treatment of waste discharges on all streams except those receiving acid mine waste discharges; New Jersey has set up standards on its tributaries similar to those of Incodel; New York will establish standards for the streams in its section as soon as its classification program is carried out.

A statistical summary of the data set forth in the report is shown in the following tabulation.

DELAWARE RIVER BASIN - ZONE 1

Summary Statistics on Pollution

January 1954

Extracted and Condensed from Tables in the Report

	Sources of Pollution	
	Municipal*	Industrial**
Number	287	83
Population Served	473,075	-

	Existing Waste Treatment Facilities				
	Municipal*			Industrial**	
	Primary Treatment	Secondary Treatment	No Treatment	Treatment	No Treatment
Number	15	199	73	53	30
Population Served	21,575	397,415	54,085	-	-

	Waste Treatment Needs					
	Municipal*			Industrial**		
	No Project Needed	Project Needed	Undetermined	No Project Needed	Project Needed	Undetermined
Number	182	91	14	34	38	11
Population Served	371,810	100,265	1,000	-	-	-

	Current Status of Action on Known Treatment Needs					
	Municipal*			Industrial**		
	Under construction	Planning or Plans Approved	Inactive or Undetermined	Under construction	Planning or Plans Approved	Inactive or Undetermined
Number	7	48	36	2	20	16
Population Served	2,245	88,395	9,625	-	-	-

* Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers.

**Industries having separate outlets discharging wastes directly to water course. The waste from industries which discharge into a municipal sewer system are included in the municipal discharge.

CONCLUSIONS

A review of the data available for inclusion in this report indicates the following conclusions:

1. The waters of the entire Delaware Basin north of Trenton (Zone 1) are generally of good quality and are relatively unpolluted except for certain localized conditions in some areas.

2. The coordinated efforts of the New Jersey State Department of Health, the New York State Department of Health and its Water Pollution Control Board, the Sanitary Water Board of the Pennsylvania State Department of Health and Incodel have produced effective results in the abatement of stream pollution. Most of the acute pollution conditions which previously existed are now corrected or are in the process of correction. This applies particularly to the lower Lehigh River and stretches of the Delaware below Port Jervis and Easton.

3. Plans for the future utilization of the waters of the Upper Delaware Basin have not been agreed upon by the various States although numerous proposals have been set forth. However, it is generally agreed by the States and Incodel that further water supply development will be necessary in the future and that such development should take precedence over other uses, preserving other uses incidental thereto to the maximum extent possible.

4. Data concerning the larger municipal sources of pollution are reasonably complete. However, the pollution control needs of the smaller unsewered communities have not been determined in many cases. Additional information is also needed concerning the pollution load being discharged to the streams from many industrial establishments.

5. Water quality data indicating the present condition of the Delaware Basin waters above Trenton, particularly with reference to known sources of pollution, are lacking. It would be desirable to determine by analytical means whether effluent and stream requirements are being met.

6. The importance of the upper Delaware for water supply to the State of New Jersey and the New York and Philadelphia Metropolitan areas is such that the quality of these waters must be further improved and protected at all costs and eternal vigilance must be maintained.

RECOMMENDATIONS

It is recommended that:

1. The New Jersey State Department of Health, the New York State Department of Health and its Water Pollution Control Board, the Sanitary Water Board of the Pennsylvania State Department of Health, and Incodel continue their cooperative program to bring about the remainder of the water pollution control projects necessary for improving and preserving the water resources of the region for their maximum appropriate usefulness and the proper maintenance and operation of existing pollution abatement facilities.

2. Investigations into the sources of pollution, water use, requirements of water resources for municipal and industrial purposes and stream water quality surveys be continued or developed as needed to assist in the advancement of the pollution abatement programs and to enable an appraisal of improvements resulting from pollution control.

3. Increased efforts be exerted by the above agencies to bring about the installation of adequate sewer systems and treatment facilities in the many unsewered communities where such improvements are needed to abate pollution.

REPORT ON WATER POLLUTION CONTROL
DELAWARE RIVER BASIN - ZONE 1

PHYSICAL DESCRIPTION

The area designated as Zone 1 of the Delaware River in the water pollution control program of the Interstate Commission on the Delaware River (Incodel) is that part of the Delaware River and its West Branch extending from the New York-Pennsylvania boundary line to the head of tidewater at Trenton, New Jersey. This report considers the entire contributory drainage area inasmuch as discharges of pollution within any intrastate tributary may affect the quality of water in Zone 1 of the interstate river. It lies in the southeastern part of New York, the northwestern part of New Jersey and the northeastern corner of Pennsylvania. The area extends from the Delaware River source on the western slope of the Catskill Mountains in the State of New York to the head of tidewater at Trenton. It contains 6852 square miles and is divided among: New Jersey - 1010 square miles, New York - 2403 square miles, and Pennsylvania - 3439 square miles. This area represents about 53.7 percent of the entire Delaware River Basin of approximately 12,760 square miles.

The section of the Basin above Port Jervis is a largely forested, mountainous area with swift flowing streams. The Catskill Mountains in the northeastern part rise to an elevation of about 3500 feet above sea level, and the Pocono Mountains lying to the southeast in Pennsylvania rise to an elevation of about 2000 feet.

Between Port Jervis and Delaware Water Gap the tributary rivers and valleys extend generally in a northeast-southwest direction with the main river channel piercing the ridges to form canyon-like gaps. The river cuts the Kittatinny Mountains at the Delaware Water Gap, providing views of exceptional scenic beauty. Below the Gap the Delaware meanders through lower lands, receives the waters of the Lehigh River at Easton, and then cuts southeasterly across various rock ridges to an elevation of 40 feet immediately above Trenton Falls before passing into the tidal area from Trenton to the Atlantic Ocean.

The watershed of the Delaware River lies within five of the major geological provinces of the eastern United States: (1) the Interior Plateau above Port Jervis, (2) the Appalachian Folds extending from Port Jervis to Delaware Water Gap, (3) the Taconic Deformation Belt from Delaware Water Gap to Easton, (4) the Atlantic Highlands from Easton to Riegelsville, and (5) the Atlantic Coastal Plain from Trenton to the sea. As to the principal tributaries of the Delaware, the Mongaup Valley lies entirely within the Interior Plateau; the Neversink lies principally within the plateau and enters the Appalachian Folds in its lower reaches; Wallenpaupack and Shohola Creeks are entirely within the Pocono region of the Interior Plateau; the Lehigh River rises in the Interior Plateau with its head waters in the Pocono Mountains and cuts through the Appalachian Folds between White Haven and Lehigh Gap, traverses the Taconic Deformation Belt to Allentown, and then follows the border line between this belt and the formations of the Atlantic Highlands to Easton.

The climate in the region is temperate. The mean annual temperature is about 50° F. Average summer temperature is about 70° F. with peaks around 100° F. The average winter temperature is about 26° F. Minimums of -30° F. have been recorded in the northern part, with as low as -14° F. at Trenton. Precipitation is well distributed throughout the year and averages about 46 inches per year. The growing season or frost free period ranges from about 170 days in the southern section to about 140 days in the northern section.

Stream flows are usually lowest during August, September and October. There are 68 non-recording and 20 recording precipitation stations and 64 stream gaging stations in this area. A summary of the stream flow records at the gaging stations may be found in Appendix C. Further data concerning stream flows may be found in "Surface Water Supply of the United States - Part 1. North Atlantic Slope Basins," Geological Survey Water Supply Papers issued by the Department of the Interior, Geological Survey, Washington, D. C.

ECONOMIC DEVELOPMENT

This region contained a population of approximately 822,700 in 1950 divided among the States about as follows: New Jersey, 144,600; New York, 90,000; and Pennsylvania, 588,100. Of this population about 378,000 or 46% of the total are concentrated in Lehigh and Northampton Counties in Pennsylvania. During the period 1940-1950, the basin population increased about 9.1 percent. In the summer months, there is a large influx of vacationists into the extensive resort areas in New York and Pennsylvania which causes a large temporary increase in population.

In the State of New Jersey, Zone 1 comprises the major portions of Mercer (53%), Sussex (56%), and Warren Counties (100%) and parts of Hunterdon (43%), Monmouth (2%) and Morris Counties (8%) in which there are located 1 city, 14 boroughs and the whole or part of 56 townships. The New York section includes the major portions of Delaware (79%), and Sullivan Counties (90%) and parts of Broome (12%), Chenango (1%), Greene (3%), Orange (9%), Schoharie (2%) and Ulster (13%) Counties in which are located 1 city and 45 towns. The Pennsylvania portion includes all of Monroe, Northampton and Pike Counties and parts of Berks (3%), Bucks (45%), Carbon (97%), Lackawanna (18%), Lehigh (76%), Luzerne (15%), Schuylkill (6%) and Wayne (93%) Counties in which there are 3 cities, 57 boroughs and 138 townships.

Population data are shown in Appendix A.

Industry is centered near the anthracite coal resources in the Lehigh Valley, especially in the Allentown-Bethlehem-Easton area. Steel production is the largest industry followed by textiles, cement making, coal mining and paper industries. Nearly half of the slate quarried in the United States originates in Northampton County, Pennsylvania. This county is the largest industrial center in the basin. In 1947 products worth $368,317,000 were manufactured by 52,000 persons in this county.

Except for this industrialized area, the rest of the basin is practically devoid of manufacturing and is devoted to agriculture, dairying and recreational activity. Hundreds of camps, resorts and hotels are scattered throughout the northern section with the main concentration in Sullivan County, New York. The nearness of this vacationland to New York City brings thousands of weary workers from the hot city to the mountain resorts during the summer months.

In 1949, the effective buying income was estimated to range from $965 per capita in Wayne County of Pennsylvania to $1479 in Monmouth County, New Jersey. The average for the entire United States was $1286 per capita in that year.

PRESENT AND FUTURE USES OF WATER RESOURCES

As envisioned in the Incodel Act, the principal uses of the waters of the Delaware River, Zone 1, are expected to be for water supply after such treatment or purification as may be necessary, and for recreation, bathing, maintenance of fish and aquatic life, agriculture and other related purposes. These waters have become the most coveted of any major stream in the East as competition has developed among these designated uses.

The Delaware River and its tributaries, in flowing through and adjacent to some of the most highly industrialized and urbanized portions of the country has had unusual demands placed upon its flow of water. The future holds little promise of respite, and it has been estimated that by 1980 two billion gallons of water daily may be required from the Delaware and its tributaries to meet the municipal demands of the people of New York, New Jersey and Pennsylvania. This water demand will be met principally from headwater reservoir development. In general the quality of the headwater streams is excellent making an ideal source of soft water for domestic use.

In addition to the diversions to be made by New York City (discussed later) there are at present 83 million gallons of water supplied daily to 557,000 people by 92 water systems in the Zone 1 area. About 85% of the total originates from surface waters. (See Appendix A.)

Upon leaving the area covered by this report, these waters in their downstream flow to the Atlantic Ocean provide successively the very life blood of the Trenton area and the rapidly growing industrial areas surrounding the Fairless Works of the U. S. Steel Corporation at Morrisville, and half of the total supply of the Philadelphia municipal water system as well as the water supply of a host of industrial establishments all along the river. A survey of industrial water use conducted by Incodel in 1951 indicates that industrial establishments located between Trenton and Wilmington use 3270 mgd, over 97% of which was drawn from the Delaware River. These plants estimated that by 1960 their water requirements would make it necessary for them to use 4634 mgd from the Delaware. The foregoing estimates do not include water use by the

Fairless Steel Works and the numerous satellite industries growing up around it which had not yet gone into operation.

Any program for utilizing the valuable water resources of the Delaware must consider the need and importance of retaining this area for recreation. A large portion of the 6800 square miles of the Delaware River Basin above Trenton is a land of forested hills, picturesque streams and scenic beauty. The mountains, lakes, and streams of this sparsely settled area are conveniently accessible to the entire population of the New York Metropolitan Area, Northern New Jersey and Eastern Pennsylvania -- well over 10 percent of the U. S. population. The Catskill and Pocono sections, in particular, furnish excellent recreational facilities including hunting, fishing, camping, and provisions for summer and winter sports. There are thousands of hotels, camps, resorts, bungalow colonies and summer cottages scattered throughout this vacationland. There are probably more hotels in the mountain region of Sullivan County, New York that cater to vacation seekers than in any other county of the nation. Fishing and hunting are prevalent throughout the area.

Among the State parks and forests are: New Jersey - Stokes State Forest, Jenny Jump State Forest, High Point Park and Washington's Crossing Park; New York - Catskill Park and Forest Preserve; Pennsylvania - Ralph Stover, Hickory Run, Tobyhanna and George W. Childs State Parks, and a large acreage of State forest land with picnic facilities.

Shad fishing was a major activity in the Delaware River years ago but is of minor importance at present. However, with the advent of pollution control in the lower River, the revival of shad fishing is anticipated. The shad spawning in the past was mainly concentrated between Trenton and Port Jervis with some spawning as far upstream as the mouth of the Lackawaxen River. Pollution has been the principal influence in decreasing the run of shad, largely because the newly-hatched young are killed in substantial numbers while attempting to go downstream to the ocean during the low stream flow periods when the worst pollution conditions exist.

It is thus important that the waters be protected to provide a suitable quality for their intended uses and it is no less important that adequate quantities be maintained. The latter is of major import to shellfish and industrial interests downstream in the transitional zone from fresh to salt water.

A resume of water supply proposals and developments for the New York-northeastern New Jersey Metropolitan area, stream regulation and hydroelectric proposals will serve to illustrate the degree to which these waters are coveted by the various interests.

Before New York City's Catskill system had even been fully completed in 1928, it was recognized that the City needed to begin preparing for still further additions to its water supply. With the new Catskill system added to the Croton Reservoir system and existing local ground water supplies, the dependable yield was approximately one billion gallons per day. An investigation of all

available sources of further water supply by New York City led to the selection of Rondout Creek, a tributary of the Hudson River, and certain of the upper tributaries of the Delaware within the State of New York. This plan, approved by the State Water Power and Control Commission in 1929, provided for the development of new sources in three stages:

First Stage -- Rondout Creek (a tributary of the Hudson) and the Neversink River (a tributary of the Delaware)

Second Stage -- East Branch of the Delaware

Third Stage -- Little Delaware River, Willowemoc Creek and Beaver Kill (all tributaries of the Delaware).

It was estimated that the entire project could be completed in 1939 providing 700 mgd, of which 600 mgd would come from tributaries of the Delaware.

The State of New Jersey promptly applied to the Supreme Court of the United States to enjoin the State and City of New York from diverting any of the waters of the Delaware or its tributaries. New Jersey contended that the diversion would cause substantial damage to navigation, water power, sanitary condition of the river, industrial use, the oyster and shad fisheries, municipal water supplies, agricultural lands and recreation. Pennsylvania became a party to the suit as intervenor to protect its rights to the Delaware River as a future water supply source. The case was heard by a Special Master whose findings were approved by the Supreme Court on May 25, 1931. (See Appendix E.) This decision (1) limits the City of New York to a diversion of 440 mgd instead of the 600 mgd requested, (2) requires that New York release from the reservoir a limited quantity of water to maintain certain minimum flows at Port Jervis or Trenton, and (3) requires the construction of an effective sewage treatment plant for Port Jervis before any diversion can be made. The decree also permits New York City to petition for an additional diversion at a future date.

Construction of New York City's revised project consisting of three impounding reservoirs (Pepacton Reservoir on the East Branch, Neversink Reservoir and Rondout Reservoir) was not started until 1937 due to the litigation and the depression years of the 1930's. By 1943 construction again halted due to World War II but fortunately the Delaware Aqueduct had been substantially completed, and temporary measures enabled the ordinary unimpounded stream flow of Rondout Creek to be delivered to the water system.

Work was resumed in 1946 and the first stage is practically completed at present. Rondout Reservoir is already in use providing 120 mgd and the operation of the Neversink Reservoir is expected to start in early spring of 1954. The second stage of the Delaware project -- the Pepacton Reservoir and connecting tunnel is presently under construction with completion expected in 1956. At the completion of this project New York will have utilized the 440 mgd authorized from the Delaware (335 mgd from Pepacton and 105 mgd from the Neversink Reservoir) plus the 120 mgd from Rondout Creek which is not tributary to the Delaware. Because of the delays incident to the Supreme Court suit, the

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depression in the early 1930's and the halting of construction during World War II, there was a total unavoidable delay of some 14 years. If construction of the Delaware project had been completed on schedule, the water shortage in New York City due to the 1949 drought conditions would have been avoided. As a result of the water shortage the City took three more steps to insure an adequate water supply for the future:

1. Conservation measures were instituted, and the public cooperated in a campaign against wasting water which resulted in a decreased use of some 260 mgd during the critical period.

2. An emergency 100 mgd pumping station on the Hudson River at Chelsea, New York, was installed to be used only in case of emergency or until the Delaware project is completed in 1956. This water would be chlorinated and mixed with the Delaware supply in the aqueduct.

3. Approval was secured from the Board of Estimate to proceed with a revised plan for the third stage of the Delaware project which includes a reservoir at Cannonsville on the West Branch from which about 312 mgd would be utilized. In addition the City would request the Supreme Court to allow an additional 48 mgd diversion from the Neversink and East Branch Reservoirs or a total of 360 mgd above the 440 mgd now permitted to be taken from Delaware tributaries. The New York State Water Power and Control Commission granted approval for this plan in November 1950, contingent upon U. S. Supreme Court modification of the existing restrictions and upon other requirements concerning water releases and the construction of barrier dams on tributaries.

Late in 1950 Incodel presented its "Report on the Utilization of the Waters of the Delaware River Basin" introducing an integrated plan for the water supply development and flow regulation of the entire Delaware River system. Two alternate plans are suggested depending upon the method of supplying Philadelphia and adjacent vicinity with additional water supply. The Incodel plan recommends the following project to serve the needs of the four State area which would be constructed in two or more stages.

Stage 1 of Incodel Recommended Project

Stage 1 is designed to provide up to 465 million gallons of water daily to meet estimated additional (to the 440 mgd previously granted by the Supreme Court) requirements of the Northern New Jersey and New York City areas for the next 30 years. It will also provide for the storage of sufficient water to maintain a minimum flow in the Delaware River at Trenton of 4000 cubic feet per second without construction of a reservoir at Wallpack Bend, and 4800 cubic feet per second with a Wallpack Bend Reservoir. The reservoirs will retain lakes of about one-third maximum reservoir depths in the driest years.

Stage 1 of the project is comprised of the following elements:

(1) A storage reservoir on the West Branch of the Delaware River at Cannonsville with a total capacity of 118 billion gallons. This reservoir would be used primarily for the purpose of furnishing water in order to increase low river flows in the entire length of the river.

(2) A diversion dam on the main river near Barryville holding about 10 billion gallons. The major purpose of this dam will be to permit the diversion of flood flows for water supply and stream flow regulation.

(3) A storage reservoir with a total capacity of 278 billion gallons on the lower Neversink River and on Basher Kill extending from Godeffroy to Phillipsport. The principal function of this reservoir will be to store the flood flows which are captured at Barryville and transported therefrom by tunnel connection between the two structures.

(4) A transmission tunnel from the upper part of Godeffroy Reservoir to New York City's existing main supply tunnels in Brooklyn. From this common transmission tunnel, connections would be made to the major water supply systems of Northern New Jersey.

(5) A storage reservoir on the main river at Wallpack Bend with a total capacity of 121 billion gallons. This reservoir is not included in an Alternate A phase of Stage 1. This alternate phase would provide stream flow regulation equivalent to a minimum of 4000 cubic feet per second at Trenton. Wallpack Bend Reservoir, however, is included in an Alternate B of Stage 1, which provides stream flow regulation equivalent to a minimum of 4800 cubic feet per second at Trenton.

The total storage provided in Alternate A of Stage 1, which would not include Wallpack Bend Reservoir, is 406 billion gallons of which at least 80 billion gallons would remain in the reservoirs to maintain minimum conservation lakes. The total storage in Alternate B of Stage 1, (which does include Wallpack Bend), is 527 billion gallons of which 110 billion gallons will remain in the reservoirs.

Provision for equalizing storage, chlorination and future filtration is made on the main tunnel in New Jersey east of the Ramapo River. Long storage is provided in the Godeffroy Reservoir to reduce the color and improve the general quality of the water.

In 1951, the proposed Incodel Compact, a measure which would provide for an interstate agency to construct and operate the proposed Incodel plan, was introduced into the legislatures of Delaware, New Jersey and New York and was passed in that same session by the States of Delaware and New Jersey. New York deferred passage until 1952 awaiting any action by Pennsylvania. The Governor of Pennsylvania decided that he was unwilling to have the legislature consider the matter until a committee named by him had made an independent appraisal of the program. In 1951 a Water Resources Committee was named by him to examine the Incodel plan for the purpose of determining whether Pennsylvania would be in a more favorable position under the plan than under the Supreme Court decree of 1931; to determine whether the plan or any modification would adequately protect the State's interests; and to conduct a preliminary study of untapped water resources still available in Pennsylvania in lieu of the Delaware.

While the committee was conducting its survey New York State passed the proposed Incodel Compact in 1952. However, New York City, feeling that it could not wait for Pennsylvania any longer filed a petition to the Supreme Court in 1952 seeking approval to proceed with its independent plan to develop the Cannonsville Reservoir on the West Branch for the purpose of securing additional water supply. The matter is pending at present.

In February 1953 the Pennsylvania Water Resources Committee on the basis of an Engineers Study Committee report rejected the Incodel Plan since it was felt that Pennsylvania would derive no such important benefits from low flow augmentation as to compensate for the total diversion of an additional 930 mgd* from the Delaware watershed. In addition there was objection to the terms of the proposed Incodel Compact regarding future water allocation to Pennsylvania.

It recommended that when Philadelphia and southeastern Pennsylvania find it necessary to go upland for their water supplies that Pennsylvania and New Jersey enter into an agreement to construct Wallpack Bend Reservoir across the Delaware. It also outlined five additional projects either in conjunction with Wallpack Bend or without it which could accommodate the needs of greater Philadelphia and South Jersey for the foreseeable future.

The New Jersey State Legislature (Chapter 443, P.L. 1953) has recently enacted a law which repeals a 1783 statute that forbids the construction of dams on the Delaware River. At the same time it permits New Jersey to enter into an agreement with Pennsylvania for the construction of a storage dam on the river. It confirms the right of New Jersey to 100 mgd from the stream and limits New Jersey's contribution to the joint project to 30 percent. The purpose of this Act is to permit the completion of a proposed New Jersey-New York-Pennsylvania settlement of the Delaware River diversion case now in the United States Supreme Court.

Therefore, as the situation stands today New York City will start operation of the Neversink Reservoir early in 1954, expects to complete the Pepacton Reservoir on the East Branch in 1956, and is presently petitioning the Supreme Court to increase its 440 mgd allotment of water by an additional 360 mgd. Also, depending upon the future action of Pennsylvania, the way is cleared for either the

*Stage 1 of Incodel Plan provides 465 mgd. Stage 2 would provide another 465 mgd. Both are in addition to the present authorization of 440 mgd.

Incodel"plan or for a joint venture by Pennsylvania and New Jersey to build the Wallpack Bend Reservoir.

Although there have been a number of investigations and proposed plans for the development of comparatively large hydroelectric power projects in the Upper Delaware, only a small amount of hydroelectric power is now being generated. The largest single power development is the Lake Wallenpaupack System of the Pennsylvania Power and Light Company having a capacity of 40,000 kilowatts. The second largest hydroelectric development is that on the Mongaup River owned by the Rockland Power and Light Company. This development has a capacity of about 30,000 kilowatts in four small plants which obtain water from four storage reservoirs on the Mongaup River.

In October 1933 the Corps of Engineers, U. S. Army, submitted a report on the Delaware River, made under the provisions of House Document No. 308, Sixty-ninth Congress, for the purposes of navigation and efficient development of its water power, the control of floods, and the needs of irrigation. The report gave consideration to the comprehensive development of the Delaware Basin and presented plans for the development of these potentialities. The following five general conclusions were reached:

"The improvement of the Delaware River for navigation above Trenton is not economically justifiable under present or prospective conditions.

"The Delaware River is of great value as a source of water supply for New York City, and probably at a future date for the cities of northeastern New Jersey and for Philadelphia.

"Existing and potential hydroelectric values are substantial and power developments may be combined advantageously with the storage and regulation necessary for municipal water supply projects.

"Future major water supply and power developments within the Delaware watershed should be coordinated, supervised or controlled by an interstate agency.

"Federal participation in any present or prospective project above Trenton does not appear justifiable."

On July 31, 1946 the Corps of Engineers submitted a review of their previous "308 Delaware River Report" in respect to the advisability of constructing certain dams and concluded the following:

"Justification is not found for developing dam sites on the river for hydroelectric power alone, the benefits in prospect for such development being less than one-half of the annual cost.

"The upper Delaware has inherent value as a source of municipal water supply, and an eventual demand that will require such development is foreseen. Wallpack Bend is considered a practicable site for a water supply dam.

"Further adjustments in the New York and New Jersey legislation would also be needed before this plan could become operative.

"The generation of hydroelectric power incidental to a reservoir development for water supply, is feasible.

"Construction of dams would not yield sufficient benefit to navigation, flood control, or other Federal interests, to warrant Federal participation in such an improvement.

"Further investigation is found to be not warranted, and it is recommended that a survey be not made."

At periodic intervals in recent years, private utility companies have filed applications with the Federal Power Commission for a license to construct dams on the Delaware River between Port Jervis and Easton for production of hydroelectric power. In every instance Incodel and the States of New York, New Jersey and Pennsylvania have protested against granting such license. The major contention is that no development should be permitted on the river which would jeopardize the development of the water resources of the Delaware River Basin by the States for future water supply.

The recent and rapidly increasing development of supplemental irrigation in Pennsylvania and to a greater extent in New Jersey is an added factor that will increase competition for the use of water from the lower Delaware and its tributaries.

The existing primary water uses and stream status are shown in Map No. 1.

POLLUTION CONTRIBUTED TO WATER RESOURCES

A summary of available data indicates there are 287 municipal* pollution sources located in Zone 1 discharging raw, partially treated or adequately treated sewage directly to streams through municipal or private sewer systems. These systems serve a population of 473,075 or about 5.5 percent of the estimated population of the area and also receive the wastes of some industries. The vast majority of these sources in New York are hotels and other resorts which operate during the summer season, most of which discharge wastes to streams only after treatment by sand filtration and chlorination. Also included in this group of 287 are a large number of unsewered communities in New York and Pennsylvania in which pollution problems exist due to the direct discharge of sewage from private homes to the streams or similar discharges through storm sewers. In these instances the municipalities listed either need both a municipal sewer system and a sewage treatment plant in order to abate pollution or the needs have not been determined as yet. Since pollution conditions are worst during the hot summer months when low stream flows prevail, the estimated summer populations of the municipal sources have been used in the tabulations.

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers or other population centers.

LOCATION MAP

EXISTING PRIMARY WATER USES

- DOMESTIC WATER SUPPLY
- INDUSTRIAL WATER SUPPLY
- LIVESTOCK
- GAME FISHING
- WILDLIFE
- BATHING WATER
- OTHER RECREATION

PRESENT STREAM STATUS

- UNDESIRABLE FOR SOME EXISTING WATER USES
- NUISANCE EXISTS

WATER USES
STREAM STATUS

Complete data on the amount of pollution discharged to streams are available for only 23 sources of pollution contributed to by some 71,300 population and discharging wastes, after treatment, equivalent to that from a population of 39,000. (See Table A.)

There are 83 industries in the Upper Delaware Basin having separate outlets discharging wastes directly to watercourses. Of this number 70 discharge organic wastes and the remaining 13 discharge wastes of an inorganic nature. The organic waste discharges from 29 of these industrial establishments are equivalent to the sewage from a population of almost 124,000 while the strength of organic waste discharges from 41 plants has not been determined. (See Table B.)

Most of the industrial activity in the Zone 1 area is concentrated along the Lehigh River in the Bethlehem-Allentown area and at the mouth of the Lehigh in the Easton-Phillipsburg area. In New York State the only industries of any pollution significance are the many small milk processing plants, in Delaware County particularly.

Map No. 2 shows the sources of pollution and existing treatment facilities in Zone 1 of the Delaware River Basin.

DAMAGES TO WATER RESOURCES

The entire Delaware Basin north of Trenton is generally clean and relatively unpolluted due in large measure to recent pollution control progress. A grossly polluted condition has existed in the Lehigh River and there have been instances of local pollution in the Delaware but these have been corrected to a large extent in recent years by the water pollution control programs now in progress.

In the upper tributaries above Port Jervis the pollution effects are of a local nature affecting the streams primarily in the immediate vicinity of the sewage outfalls. On the Delaware itself a former pollution condition which existed for some miles below Port Jervis has been alleviated by the completion of a new sewage treatment plant at Port Jervis. This plant was completed in 1953 by New York City in conformance with the Supreme Court decree of 1931 requiring the operation of this facility before any water supply diversions could be made. Progressing downstream a pollution condition still exists near the mouth of Brodhead Creek which drains the Stroudsburg area. This should be corrected in the near future by treatment projects planned by Stroudsburg, East Stroudsburg and the neighboring industries.

The Lehigh River from the vicinity of Lehighton to its mouth where it enters the Delaware River at Easton has joined the growing ranks of streams that have recovered from a grossly polluted condition to a clean stream as a result of water pollution abatement programs. The improvement has been progressive over the years, having started with the installation by the anthracite collieries of treatment systems which prevented the discharge of silt

TABLE A

DELAWARE RIVER BASIN - ZONE 1

Sources of Pollution

January 1954

Municipal*

Municipalities	Sources of Pollution	Population Served by Sewerage Systems	Amount of Pollution Discharged to Watercourse (In Terms of Equivalent No. of People**
Having data on pollution load discharged to watercourse	23	71,325	39,150
Having population data available (Data on pollution load to watercourse incomplete or not available)	264	401,750	Undetermined
TOTAL	287	473,075	

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other population centers.

**Includes industrial wastes discharged into municipal sewerage systems.

TABLE B

DELAWARE RIVER BASIN - ZONE 1

Sources of Pollution

January 1954

Industrial*

Industries	Sources of Pollution (In Number of Plants)	Amount of Pollution Discharged to Watercourse (In terms of Equivalent Number of People)**
Producing Organic Wastes (Load Known)	29	123,900
Producing Organic Wastes (Load Unknown)	41	Undetermined
Producing Inorganic Wastes	13	Not applicable
TOTAL	83	--

*Industries having separate outlets discharging wastes directly to watercourse. The waste from industries which discharge into a municipal sewer system are included in the municipal discharge in Table A.

**Population Equivalent - The calculated population which would normally contribute the same amount of biochemical oxygen demand (B.O.D.) per day. A common base is 0.167 pounds of 5-day B.O.D. per capita per day.

and fine sizes of coal to the river. The recent construction of sewage treatment plants by Bethlehem, Easton and Lehighton and industrial waste facilities by the Bethlehem Steel Company, New Jersey Zinc Company and others are highly important contributions to the improved condition of the stream.

Improvement of the Lehigh has not yet extended to the section from Lehigh Gap to near White Haven which is polluted by acid mine drainage from the coal mines and sewage from the communities of Mauch Chunk, East Mauch Chunk, Hazleton and Freeland. Above White Haven the river is not polluted from any source.

The above improvements coupled with the recent pollution abatement program in Phillipsburg have cleared up the former pollution situation that existed for about 20 miles down the Delaware below the mouth of the Lehigh at Easton. In past years the effects of this pollution occasionally were felt at the Trenton water supply intake where troublesome water treatment problems arose. On some occasions industries in this area have discharged poisonous chemical wastes and taste and odor producing wastes which have seriously endangered the downstream water supplies of Trenton, Bristol, Burlington and Philadelphia.

Soil erosion is moderate in several portions of the area covered in this report. Most of this occurs in open land sections which have been cleared and cultivated. It is particularly noticeable in the Lehigh Valley in Pennsylvania. The heavily forested and mountainous Pocono and Catskill areas are practically free of erosion. Through the activities of Incodel, the State Extension Service and the U. S. Soil Conservation Service progress is being made in soil and forest conservation. The agencies chiefly responsible for better forest conservation are the State Forestry Departments, namely, the Pennsylvania Department of Forests and Waters, the New Jersey Department of Conservation and Economic Development, Division of Forestry and the New York Conservation Department, Division of Lands and Forests. Incodel, in cooperation with these agencies, is active in the development of conservation projects particularly on the small watersheds in the area.

BENEFITS RESULTING FROM POLLUTION PREVENTION AND ABATEMENT

Benefits to be derived from pollution control of the Delaware River Basin need no detailed justification. No major watershed in the United States is more useful and valuable, either now or potentially than the Delaware. More than 5,000,000 people live within the Basin itself and more than 10,000,000 reside outside of the Basin within two hours driving time. A substantial portion of the latter are dependent for their future existence on the wise development and use of the waters of the Upper Delaware. Money spent for water buys more benefits to the public than money spent for any other commodity. It is therefore imperative to protect the quality and provide the quantity necessary to support the population concentrations, their industrial economy and their recreational activities. There is greater realization of the necessity for this in the Delaware River Basin in the last few years than at any time in the past.

The vastly improved condition of the Lehigh exemplifies the benefits to be

SOURCES OF POLLUTION
AND
EXISTING TREATMENT FACILITIES
LOCATION MAP

derived from pollution prevention and abatement. Fish are running again in the lower stretch of the river, formerly almost devoid of them. Surveys in the last five years have shown that a number of the more sensitive species of fish, including pickerel and bass as well as the hardier catfish, perch and sunfish had returned to the area. Brown trout were actually found between Allentown and Bethlehem. As a result of the improvement of the river recreation including boating, swimming and boat racing, is being considerably expanded at Allentown, which many years ago was a resort area.

Sportmen's groups cleaned out and restored about two miles of the Lehigh Canal, stocked the section with fish, and now provide swimming and fishing for the public. The State Fish Commission also stocks three other areas of the Canal for a total distance of about 10 miles. Representatives of 40 sportsmen's clubs in sections from Easton to White Haven have also formed the Lehigh River Restoration Association which is engaged in bringing about the restoration of the river for industrial and recreational purposes. In addition the State Fish Commission conducted an experimental stocking of the lower Lehigh last fall with successful results anticipated.

In some cases industries which had formerly been throwing away vast amounts of valuable products are finding that their treatment and recovery systems are yielding profits. A good example of this is the treatment plant installed by the Bethlehem Steel Company to prevent pollution caused by blast furnace flue dust at its Bethlehem mill. The treatment plant, which cost about $516,000 to install, not only accomplished its purpose of preventing stream pollution, but the company found, after deducting the cost of operation and the cost of sintering the recovered ore dust, the plant showed a profit of $580,000 in the first year.

Stream pollution measures undertaken in recent years on the Delaware from Wilmington to Trenton have started to improve conditions for the return of fish life. It has been reported that the numbers of mackerel, shad and herring have increased and these fish are reaching the Zone 1 area above Trenton. Adult and fingerling shad have been found in the vicinity of Lambertville and Milford. In the past the young shad returning downstream could not survive the pollution encountered in the lower river. It has been reported that there are sufficient shad in the area to reproduce and return shad fishing to the Delaware within a few years after the stream has been sufficiently improved.

POLLUTION PREVENTION MEASURES IN EFFECT

Treatment Facilities

In Zone 1 of the Delaware River Basin, there are 214 municipal sewage treatment plants in operation serving a population of about 419,000, -- about 89% of the sewered population. Of this number 199 provide secondary treatment for over 397,000 population while 15 provide primary type treatment only for some 21,500 population. (See Table C.)

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TABLE C

DELAWARE RIVER BASIN - ZONE 1

Existing Treatment Facilities

January 1954

Municipal*

Degree of Treatment Provided	Number of Municipalities Served	Number of Treatment Plants	Population Served
Primary	15	15 (a)	21,575
Secondary	198	199 (b)	397,415
No Treatment	73	73	54,085
TOTAL	286	287	473,075

*Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers, or other population centers.

(a) Includes three plants with minor treatment facilities.

(b) Includes two plants in Newton, New Jersey.

No treatment facilities are provided in 73 municipalities with some 54,000 population. Represented largely in this group are small unsewered communities in New York and Pennsylvania in which private discharges are reaching the waterways. All of the significant municipal pollution sources in New Jersey are provided with sewage treatment facilities.

Fifty-three of the industrial establishments are served by waste treatment facilities, while the wastes of 30 industries are discharged untreated directly to watercourses. Five industrial plants in New Jersey which have no treatment facilities have been found by the New Jersey State Health Department to need no further treatment because wastes are weak and small in quantity. The breakdown of this group into types of industry shows the food processing industry with 41 plants, the chemical industry with nine plants and the textile and paper and pulp industries each with eight plants are the leading waste producers in the Upper Delaware Basin. (See Table D.)

New construction completed since World War II, 1946-1953, for abatement of stream pollution in Zone 1 of the Delaware River Basin has relieved almost all of the more significant pollution conditions that were previously existing in the basin. In all 138 municipal sewage treatment plants and 21 industrial waste treatment facilities have been built during this period. It is of interest to note the increase in industrial waste treatment construction in the last few years. (See Table E.)

The municipal figures are a bit misleading since the great bulk of the municipal projects are small sand filter installations serving summer hotels in New York State. Not included in the industrial tabulation are many small industries, particularly dairies, throughout the area which have abated pollution by sub-surface disposal methods, process changes or connection to municipal sewer systems.

The greatest area of recent abatement activity has been on the Lehigh River and on the Delaware near the mouth of the Lehigh where Lehighton, Allentown, Allentown State Hospital, Bethlehem and Easton in Pennsylvania and Phillipsburg in New Jersey have all recently constructed new plants or completed major additions. Industrial waste treatment facilities have been built by C. K. Williams Co., Lehigh Structural Steel Co., Stoney Ridge Silica Co., New Jersey Zinc Co. of Pennsylvania, Long Valley Rug Co., Trojan Powder Co. and the Bethlehem Steel Co. Connections to municipal sewer systems have been made by the Western Electric Co., Kuebler Brewing Co., Delaware Dye and Finishing Co., Pennlack Co., R. F. Dye Works, and others.

In New York State, sanitary districts have been formed and treatment facilities installed in many of the resort communities, connecting the neighboring resort hotels to the one central facility. These communities include Sackett Lake, Lake Huntington, Swan Lake-Stevensville, Monticello, and Loch Sheldrake.

In New Jersey many small dairies have adopted good housekeeping measures and sub-surface disposal methods to eliminate waste from reaching streams. Many industries in the Newton area, including the Darlington Fabrics Co., Sussex Print

TABLE D

DELAWARE RIVER BASIN - ZONE 1

Existing Treatment Facilities

January 1954

Industrial*

Type of Industry	Number of Plants	Number of Industrial Plants Having: Treatment Facilities	No Treatment Facilities
Food and Kindred	41	20	21
Textile	8	7	1
Paper and Allied	8	8	0
Chemical	9	6	3
Primary Metals	1	1	0
Fabricated Metals	4	2	2
Petroleum and Coal Products	3	3	0
Other Mining	2	2	0
Miscellaneous	7	4	3
TOTAL	83	53	30 (a)

*Industries having separate outlets discharging wastes directly to water course.

(a) Includes 5 industrial plants (1 food and kindred, 1 chemical, 1 fabricated metals, 2 miscellaneous) which have no treatment facilities and which the New Jersey Dept. of Health feels need no further treatment.

TABLE E

DELAWARE RIVER BASIN - ZONE 1

Progress in Construction of Pollution Abatement Facilities

Year	Municipal: Sewage Treatment Plants Completed	Municipal: Design Population	Industrial: Waste Treatment Plants Completed	Industrial: Amount of Waste Treated (In terms of Equivalent No. of People)
1946	6	975	-	
1947	12	2,155	-	Data
1948	23 (a)	5,565	-	
1949	28	4,000	1	
1950	18	8,005	2	not
1951	15 (b)	7,555	4 (d)	
1952	15 (c)	75,230	6 (d)	Available
1953	21 (d)	208,025	9	

(a) Includes 1 addition for 600 population.
(b) Includes 2 additions.
(c) Includes 2 additions.
(d) Includes 1 addition.

& Dye Works and the American Sheep Tanning Co. have connected to the two existing sewage treatment plants. At present construction is underway to enlarge one of these plants so that the other may be abandoned.

Incodel Requirements

The control of wastes discharged into the waters of Zone 1 of the Delaware River Basin is under the jurisdiction of the New York State Department of Health* (see note below), New Jersey State Department of Health, and the Sanitary Water Board of the Pennsylvania Department of Health. Each State has laws controlling the discharge of wastes into the waters of the respective States. In addition thereto the States have enacted reciprocal legislation known as the Incodel Act, which provides minimum treatment requirements for all wastes discharged into the Delaware River and the maintenance of the waters of any intrastate tributary of the Delaware immediately above its confluence with the Delaware River in condition at least equal to that in the Delaware River immediately above the confluence of such tributary. The Incodel laws enacted in these three States are: New Jersey - Chapter 146, July 1, 1939; New York - Chapter 600, May 31, 1939 and Pennsylvania - Chapter 123, April 19, 1945. There is close cooperation between the State water pollution control agencies and Incodel, with Incodel acting as the coordinating agency.

The minimum water quality requirements for Zone 1 of the interstate Delaware River and treatment requirements for wastes discharged thereto as set forth in the Incodel Act are as follows:

Zone 1: 1. Such effluent shall be free of noticeable floating solids, color, oil, grease, or sleek, and practically free of suspended solids.

2. Such effluent shall be sufficiently free of turbidity that it will not cause noticeable turbidity in the water of the Delaware River.

3. Such effluent shall show a reduction of organic substances of at least eighty-five (85) percent as measured by the biochemical oxygen demand, and furthermore, such effluent in no case shall exceed a biochemical oxygen demand of fifty (50) parts per million, and furthermore, the discharge of such effluent, after dispersion in the water of the river, shall not cause a

*The Incodel Act and the portion of the State Sanitary Code dealing with sewage pollution are the principal control measures in New York State at present. The State Department of Health is charged with the enforcement of both. When the Delaware Basin has been classified under the provisions of the Water Pollution Control Law, Chapter 666, Article 6, enacted in 1949, and a comprehensive program has been adopted in accordance therewith, the control of pollution will be under the jurisdiction of the Water Pollution Control Board in the New York State Department of Health in addition to the foregoing. New outlets currently must come before the Board for approval prior to construction.

reduction of the dissolved oxygen content of such water of more than five (5) percent. The aforesaid reduction in dissolved oxygen content shall be determined by the average results obtained from dissolved oxygen tests made upon samples collected on not less than six (6) consecutive days from points in the river above and below the point or points of effluent discharge.

4. Such effluent shall be of such quality that the most probable number of organisms of the Coli Aerogenes group shall not exceed one (1) per milliliter in more than ten (10) percent of the samples of sewage effluent tested by the confirmed test, and provided further that no single sample shall contain more than one hundred (100) organisms of the Coli Aerogenes group in one (1) milliliter.

5. Such effluent shall be sufficiently free of acids, alkalis, and other toxic or deleterious substances, that it will not create a menace to the public health through the use of the waters of the Delaware River for public water supplies, for recreation, bathing, agriculture and other purposes; nor be inimical to fish, animal or aquatic life.

6. Such effluent shall be free of offensive odors and also be free of substances capable of producing offensive tastes or odors in public water supplies derived from the Delaware River at any place below the discharge of such effluent.

State Laws and Regulations

Pollution prevention measures in New Jersey are based upon two laws, both enacted in 1899 and later amended and supplemented. One of these laws, "An Act to secure the purity of public supplies of potable waters," prohibits the discharge of excremental matter, industrial wastes or other polluting matter into water later used for potable purposes; as well as the deposition of such materials upon the banks of such waters. However, "An Act to regulate the discharge of effluents from sewage systems or works into potable waters" (Act of 1921) provides that effluents from sewage and industrial waste treatment plants may be discharged into waters later used for public potable purposes; provided, that, in the opinion of the State Department of Health, such effluents discharged will or may not cause or threaten injury to the users of any of such waters. The second law, the State Sewage Act, applies to all waters of the State. Under the provisions of this law, the State Department of Health is granted the following authority: (1) to investigate the various methods of sewage or waste disposal in order that it may make proper recommendations in regard thereto; (2) to require that anyone polluting the waters of the State in such manner as to cause or threaten injury to any inhabitants of the State, either in their health, comfort or property, cease such pollution; (3) to require alterations, additions or improvements to sewage or industrial waste treatment works; (4) to establish the conditions under which any sewer, drain or sewerage system shall be built; and (5) to establish the conditions under which any plant for the treatment of sewage or other polluting substance shall be built or operated. The law provides further, that

before the building of any plant for the treatment of sewage or other polluting substances, the plans shall be submitted to the State Department of Health for approval.

The New York State Department of Health maintains public health control over the waters of the State and their utilization for water supply purposes.

The Division of Water Power and Control of the Conservation Department is charged with the allocation of water supply sources among the State's population and it maintains control over the acquisition, or development of new or extension of existing water supply systems. The division has the power, after proper proceedings, to construct and operate reservoirs in the Forest Preserve for municipal water supply purposes.

Recognizing that the maintenance of the water resources of the State free from excessive pollution is essential to the preservation of the usefulness of these waters for public water supplies, for bathing, boating and recreation, for industrial processing and other industrial uses, and for other social and esthetic purposes, the State legislature enacted a new Water Pollution Control Law in 1949, as a portion of the Public Health Law. This law, administered by a Board within the State Health Department composed of the heads of the Health, Conservation, Commerce, Agriculture and Markets, and Public Works Departments, supplants or will supplant the former pollution control provisions of the health and conservation laws. As outlined in the law, the work of the Board is divided into two sections: (1) prevention of new pollution and (2) abatement of existing pollution in accordance with a program consistent with the public policy. The public policy of the State of New York in water pollution control is to maintain reasonable standards of purity of the waters of the State consistent with public health and the public enjoyment thereof, the propagation and protection of fish and wild life, and the industrial development of the State and requires the use of all known available and reasonable methods to prevent and control the pollution of the waters of the State. The Water Pollution Control Board has adopted the following procedure in establishing standards of quality and purity of waters, and in classifying waters: (1) studies will be made of the designated waters to obtain necessary data; (2) a report of the studies together with recommended classification and standards of purity will be distributed to all parties having a specific interest in the classification of the designated waters; (3) after due notice, there will be a public hearing on the report; (4) a report of the hearing and the final recommendations of the Executive Secretary will be transmitted to the Board for consideration; (5) the Board, after due consideration of the recommendations, will make a determination with reference to the designated waters specifying (a) the best usage for these waters in the public interest (b) the class or classes to which these waters should be assigned (c) the standards of quality and purity which shall be assigned to each class. Once classifications are established, pollution is defined as the discharge of wastes of such nature and extent as to contravene the quality standards for the classes of waters into which these wastes are being discharged.

New York has adopted the policy of attacking the State's worst pollution

areas first before proceeding to classify the lesser problem areas. Due to a lack of funds and personnel, the classification survey of the Delaware watershed has not been undertaken.

The program for abatement of stream pollution in Pennsylvania is conducted by the Sanitary Water Board, an agency within the Department of Health, under the Pennsylvania Anti-Pollution Act of 1937 as amended in 1945. The first phase of the program, which involves the issuance of orders to municipalities and industries which are polluting the waters of the State to abate the discharges of such pollution or submit to the Board plans of corrective measures for approval, is completed in Zone 1 of the Delaware River Basin. The second phase is concerned with the construction and operation of the required waste treatment facilities. Following approval of the detailed plans the Board issued orders requiring construction and operation of the approved facilities on or before specified dates. This phase of the program in the Pennsylvania section of the basin is also well advanced.

Specific standards have been adopted by the Pennsylvania Sanitary Water Board for certain industrial wastes including milk processing wastes, colliery silt, acid pickling waste waters, wastes arising from the manufacture of pulp, paper, paper board and similar products, oil and natural gas wells, wastes from other wells, phenolic bodies, oil bearing wastes, distillery wastes, tannery waste waters and mine drainage. The discharge of cyanides to the waters of the State is prohibited. In general the standards set forth values representative of standard raw waste characteristics which serve as the basis upon which the required degree of treatment is applied.

Provisions governing financing the construction and operation of municipal sewage treatment plants are contained in the laws of the respective States.

The debt limit in New Jersey is 7% of the average assessed valuations of real property including improvements for municipalities and 4% for counties. A municipality with indebtedness over the limit may incur new debt only within the limitations of the statute, which in brief are the orders of a superior governmental authority such as an order of the State Department of Health to construct a sewer, capital debt for emergency purposes such as fire, flood or other disaster, the refunding of floating debt with the consent of the State Funding Commission, and the incurring of general debt based on the amount of debt retired in a prior year. The latter is a limited power provided by statute to take care of cases where certain capital expenditures should be incurred which do not fall in any of the exempted classifications. A municipality may incur debt in excess of statutory limitations if it has been found by the State Department of Health, and an order issued, that the expenditure is necessary to protect the public health and to prevent or suppress a present menace to the public health of sufficient gravity to justify the incurrence of the debt, and that no less expensive method of preventing or suppressing such menace exists.

New Jersey also has statutes under which sewer districts within a municipality or covering a complete municipality or two or more municipalities may be formed. It has a sewer rental law, under which sewerage works may be constructed

and maintained as separate entities within other local government structures. There is also a sewerage authority law. Sewerage authorities may encompass a part of a municipality, a total municipality or two or more municipalities. Sewerage authorities are separate entities which operate, after appointment, independently of the local governing body.

The Anti-Pollution Laws of Pennsylvania contain provisions relating to the financing of the construction of municipal sewage treatment plants. Municipalities which are ordered to construct sewage treatment plants and do not have sufficient funds on hand must acquire such funds through a bond issue. If direct obligation bonds cannot be issued because of constitutional debt limitations or failure to get consent of the electors, financing can be done by the establishment of a municipal authority to construct, improve, maintain and operate sewers and sewage treatment works. A municipal authority is created by the governing body of the governmental subdivision by passage of an ordinance and the members of the authority are appointed by the governing body which creates the authority. The existence of an authority is limited to 50 years. It must procure a charter from the State before it can operate. In such cases a system of sewer rental charges is practically always adopted as the method for financing the sewage treatment facilities. The Pennsylvania Supreme Court in a recent case ruled that municipal authorities may assess charges against adjoining property owners to defray the expense of building a sewer. Financing of industrial waste treatment facilities is entirely the responsibility of the industry. In the case of the marginal industry operating in keen competition, the cost of treatment facilities is sometimes a major item of expense.

The Pennsylvania Legislature has recently passed Act No. 339, approved August 20, 1953, "Providing for payments by the Commonwealth to municipalities which have expended money to acquire and construct sewage treatment plants in accordance with the Clean Streams Program..." Sewage treatment works and necessary appurtenences constructed by municipalities and municipal authorities after September 1, 1937, will be eligible to receive from the State an annual payment of up to two percent of the cost of construction of the treatment works. Payments will commence July 1, 1954. The cost of construction of sewage treatment works eligible under the Act shall not include abandoned or obsolete units.

New York laws on financing sewers and sewage treatment works are based on the fiscal limitations respecting general obligation bonds. Constitutional debt limit restrictions made it impossible in the past for many communities, particularly the smaller ones, to provide for financing sewer systems and sewage treatment works. Recent amendments now permit a municipality to undertake construction of needed sewer facilities if it has a debt margin of 25 percent of the cost of the project, providing the remaining 75 percent can be made self-sustaining through sewer rentals. This 75 percent can then be excluded from the constitutional debt limit. Sewerage authorities can be established only by a special act of the legislature and also require the approval of the electors of the city when such a public corporation is contemplated within the boundaries of any city.

The Interstate Commission on the Delaware River Basin has no enforcement powers. It is engaged in the formation and execution of a coordinated, unified plan looking toward the wise use, development, and control of the resources of

the Delaware River Basin as a whole. Through its cooperation with Federal, State and numerous local agencies and organizations substantial strides are being made in the pollution control program in Zone 1 of the Delaware River Basin. Effective educational work is carried on to acquaint the public with the problems to be solved and procedures for accomplishing the control of pollution and development of the overall program in the basin.

In Pennsylvania the Sanitary Water Board has an extensive educational program underway to enlist the support of the public and industry in the Board's program to control pollution of the streams. This activity is conducted through the use of periodicals, colored posters, mailing leaflets, special articles for technical publications, motion pictures, radio, press, working models of installations, the extensive use of photographs and by participation in meetings of civic, technical and other educational groups.

POLLUTION PREVENTION MEASURES NEEDED

New sewage treatment facilities are needed for 59 municipal sewer systems serving 52,700 population. Included in this number are 23 unsewered communities with 11,500 population in which both sewer systems and treatment works are needed. In addition 2 municipal systems serving 580 people can solve their pollution problems by connection to other municipal sewer systems. Enlargements or additions to presently inadequate facilities are needed by 27 municipal systems serving a population of 45,500 while 3 treatment works serving 1450 population need replacement. The sewage treatment facilities for 182 municipalities serving some 371,800 or 76% of the basin's sewered population, are considered adequate and no projects are needed. The pollution prevention needs of 1000 people in 14 small communities, many of which are unsewered, have not been determined. (See Table F.)

There are 17 industries in the basin discharging untreated wastes to watercourses which need new waste treatment plants or internal process changes to abate their pollutional discharges. In addition 9 industrial plants are planning to connect their waste discharges to municipal sewer systems. There are 10 industrial waste treatment plants which need enlargements or additions to their present treatment facilities and two which need complete replacement. No projects are needed at 34 waste treatment plants which are considered adequate while the needs of 11 additional industrial pollution sources have not been determined. (See Table G.)

Pollution abatement needs are shown on Map No. 3.

Considerable advancement has been made in the program for control of pollution in Zone 1 of the Delaware River Basin and much progress is now under way. A summary of the current status of municipal action on pollution abatement needs indicates that of 91 sources of pollution which need correction with new facilities or improvements, facilities now under construction or in the final planning stage will satisfy the need of 41 sources involving 56,700 population. An additional 14 municipalities with 33,900 population are in preliminary planning stages. The remaining 36 sources involving only 9600 population are for

the most part small unsewered communities in New York and Pennsylvania. The population figures given are the best estimates available of the amount of pollution which reaches the stream through private outfalls, connections to storm drains and overflowing septic tanks. (See Table H.)

A similar summary of the 38 industrial plants with waste treatment needs indicates that 5 of these have facilities under construction or in the final planning stage and 17 others are in preliminary planning phases. No action has been taken by the 16 remaining industrial plants. This number includes plants in New York State whose needs will remain undetermined until the stream classification program in the Basin has been completed. (See Table I.)

A list of the municipalities and industries needing improvements as of January 1954 for abatement of pollution in Zone 1 of the Delaware River Basin are set forth in Table J. Basic data as of the same date on the sources of municipal and industrial pollution entering Zone 1 are presented in Tables 1 and 2 of the Appendixes.

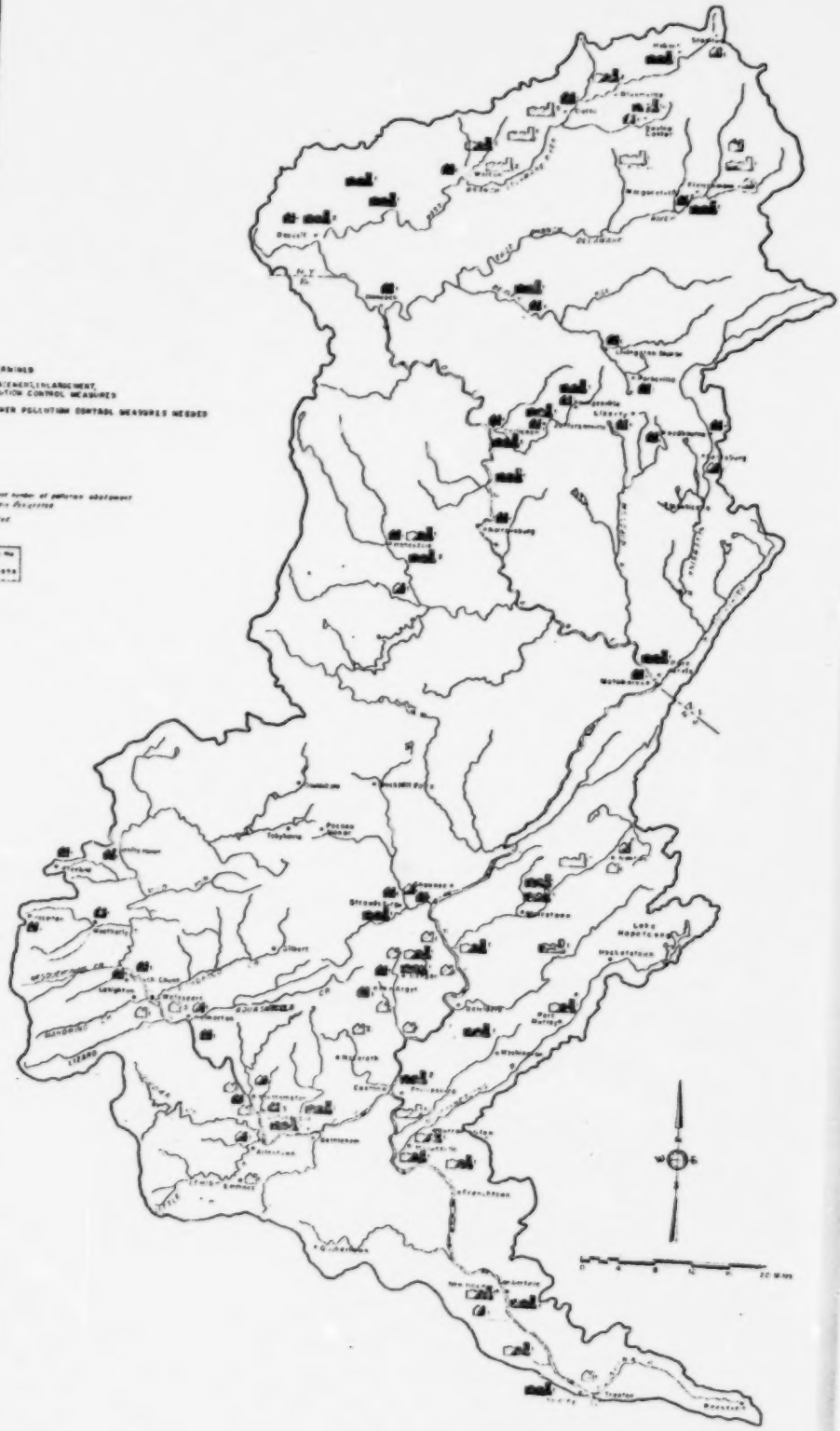

TABLE F

DELAWARE RIVER BASIN - ZONE 1

Waste Treatment Needs

January 1954

Municipal*

Needs	Number of Sources	Population Served by Facilities
New Plant	59 (a)	52,685 (a)
Connect to trunk sewer system	2	580
Enlargement or additions to existing plant	27 (b)	45,550 (b)
Replace Existing Plant	3	1,450
No Project Needed	182	371,810
Undetermined	14	1,000
TOTAL	287	473,075

*Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts recreational centers or other population centers.

(a) Includes 23 sources of pollution serving 11,500 population which need both a sewerage system and a new treatment plant.

(b) Includes 9 existing facilities serving 455 population which need chlorination only.

TABLE G

DELAWARE RIVER BASIN - ZONE 1

Water Pollution Abatement Needs

January 1954

Industrial*

Needs	Number
New Treatment Plant or Other Pollution Control Measures	17
Connection to Municipal Sewer System	9
Enlargement or Additions to Existing Treatment Plant	10
Replace Existing Treatment Plant	2
No Project Needed	34
Undetermined	11

*Industries having separate outlets discharging wastes directly to watercourse.

TABLE H

DELAWARE RIVER BASIN - ZONE 1

Status of Municipal* Action on
Pollution Abatement Needs

January 1954

Status of Action	Number of Municipalities	Population Served
Inactive or Undetermined	36	9,625
Active Planning**	14	33,900
Final Plans Approved***	34	54,495
Under Construction	7	2,245
TOTAL	91	100,265

*Includes incorporated or unincorporated municipalities, other legal bodies as sanitary districts, counties, towns, significant institutions, resorts, recreational centers, or other large population centers.

** Includes preliminary action such as securing engineering services, making surveys, preparing plans, arranging for purchase of site, developing financial program, studying means for additional treatment, or consideration of joint treatment with industry or other municipalities.

*** Includes plans approved by State Water Pollution Control Agency or final plans submitted to said Agency for approval.

TABLE I

DELAWARE RIVER BASIN - ZONE 1

Current Status of Industrial* Action
on Pollution Abatement Needs

January 1954

Status of Action	Number of Industries
Inactive or Undetermined	16
Active Planning**	17
Final Plans Approved***	3
Under Construction	2
TOTAL	38

*Industries having separate outlets discharging wastes directly to watercourse.

** Includes preliminary action such as securing engineering services; making survey, preparing plans, arranging for purchase of site; developing financial program, studying need for additional, joint or pre-treatment; pilot plant operation; internal process changes, or negotiations with municipality to enter municipal sewer system.

*** Includes plans approved by State Water Pollution Control Agency, final plans submitted to said Agency for approval or permission granted by municipality for connection to municipal sewer system.

TABLE J

DELAWARE RIVER BASIN - ZONE 1

Municipalities and Industries Needing Improvements for Abatement of Pollution*

January 1954

New Jersey

(Blairstown)
Blair Academy Laundry

(Hughesville)
Riegel Paper Co.

(Knowlton Twp.)
Janssen Dairy Corp.

Lambertville Sewerage Authority

(Milford)
Riegel Paper Co.

Newton **

(Oxford)
Oxwall Products Mfg. Co. **

(Phillipsburg)
Baker Chemical Co.

(Port Murray)
Port Murray Creamery **

(Riegelsville)
Riegel Paper Co.

(Stillwater)
Sussex Milk & Cream Co.

(Tranquility)
Sussex Milk & Cream Co.

(Trenton)
Mercer Co. Workhouse

New York

Arkville

(Bethel Town)
Camp Chipinaw
Di Montova Bungalows
Garden Cottages
National Hotel
Rosenberg's Bungalows

(Bloomville)
MacIntosh Abattoir
MacIntosh Slaughterhouse

Bovina Center
Bovina Center Coop. Dairy

*For details see Tables Nos. 1 and 2. This table does not include municipalities or industries listed with needs undetermined.

() Municipalities enclosed by parenthesis are not in need of improvements and only indicate the location of the industrial establishment or resort.

** Needed improvements are under construction.

New York (Cont.)

Callicoon
- Blum's Orchard Grove
- Chasin's Hemlock Grove House
- Dairymen's League Coop. Assn.

(Cannonsville)
- Queens Farms Dairy

(Cochecton)
- Borden's Farm Products Co.

Cooks Falls
- Cooks Falls Lodge

(Delaware Town)
- Sackman House
- Valley View House

Delhi

Deposit
- Borden's Farm Products Co.
- Newark Milk & Cream Co.

(Fallsburgh Town)
- Arcadia Lake Hotel
- Brown's Hotel & Country Club **
- Furst Hotel
- Greenwood Park Bungalows **
- Heiden Hotel
- Moonglow Inn
- Herman Singer Bungalows
- Sunny Hill Bungalows
- Sunnyside Cottages
- Woodbourne Sky House
- Olympic Hotel **

Fleischmanns

(Halcottsville)
- Sheffield Farms, Inc.

Hancock

(Hobart)
- Rothenberg Packing Co.

(Highland Town)
- Ralph Kistner's

(Horton)
- George I. Treyz, Inc.

Hurleyville

Jeffersonville

(Liberty Town)
- Adler's Bungalows **
- East Hill House
- Fox Mountain House
- Hecht Bros. Lodging House
- Highview House **
- Malachowsky Farm House
- Mollie's Famous Rooming House **
- Normandie Hotel
- Rose Cottage

Livingston Manor

Margaretville
- Dairymen's League Coop. Assn.

Narrowsburg

Parksville

(Port Jervis)
- Van Inwegen Farm

(Rockland Town)
- Willowemoc Hotel

(Rock Royal)
- Rock Royal Coop., Inc.

Roxbury

South Fallsburgh

Stamford

(Thompson Town)
- Altman's Bungalows
- Dressler's Bungalows
- Hamilton Acres
- Hungarian House
- River Haven
- Willow Lane Hotel
- Wolf's Corners Bungalow Colony

New York (Cont.)

(Tusten Town)
Bellewood Cottages
Silver Spring Manor

Walton
Breakstone Bros., Inc.
Middletown Milk & Cream Co.

Pennsylvania

Bangor
Blue Ridge Textile Co.
Julius Kayser & Co.

(Bethlehem)
Superior Metal Products Co.

(Canaan Twp.)
Farview State Hospital

Catasauqua
Eagle Brewing Co.

Copley

East Mauch Chunk

(Easton)
Forrest Piece Dye Works

East Stroudsburg
East Stroudsburg Sewer Co.

Freeland

Fullerton

Hazleton

Honesdale
Clemo Milk Products Co.
Dairymen's League Coop. Assn.

Lehigh County Home

Matamoras

White Sulphur Springs

Woodbourne

Youngsville

Mauch Chunk

(Morrisville)
Bucks County Farm Dairies

(New Hope)
Paper Mfg. Co.

Northampton

North Catasauqua

Palmerton Disposal Co.

Pen Argyl

(Pocono Twp.)
Pocono Manor Assn.

Portland

Quakertown

Slatington

Stroudsburg
Monroe Dairy

(Texas Twp.)
Birdsall Bros. Co.

Walnutport

Weatherly

White Haven

(Yardley)
Cold Spring Bleachery

BASIC DATA TABLES

The data as of January 1954 listed on the following Basic Data Tables were reported by the New Jersey State Department of Health, the Water Pollution Control Board, New York State Department of Health, and the Sanitary Water Board of the Pennsylvania Department of Health. They are arranged by watershed area which enables the reader to isolate, for any particular area, the amounts and kinds of pollution being discharged and the adequacy of treatment where provided. The Delaware River is listed first, starting at the juncture of the East and West Branches with the sources of pollution farthest upstream and continuing down to the head of tidewater at Trenton, New Jersey where Zone 1 ends. Each tributary along with its branches is then covered in downstream order. Those tributaries which receive no pollution are not listed, while those receiving municipal pollution will be found in Table 1 (Municipal) and similarly, those receiving industrial pollution in Table 2 (Industrial).

The reader is cautioned not to assume the entries as final. Changing conditions in water uses, pollution contributed, stream quality, information obtained during surveys and other circumstances, may dictate readjustments.

Table 1 applies to municipalities. Included, but not listed, are those industries discharging wastes into municipal sewers. Table 2 applies only to industries discharging directly to a watercourse.

To aid in finding the location of the various sources of pollution, a stream code and river mileage system has been devised. Each of the pollution points on any stream is listed in downstream order beneath the name of that stream, accompanied by its distance in river miles from the mouth of the stream. Tributary streams are further identified by a symbol indicating the stream to which they are tributary and a mileage number indicating in river miles the point at which they join the larger stream. With this information any sources of pollution may be located with respect to the mouth of the main stream of the basin. The zero mileage point for the Delaware River system has been established at Liston Point, Delaware.

Example: To locate the outfall of Roscoe, New York listed in Table 1. It is found that Roscoe discharges to Willowemoc Creek at a point about 1.0 mile from its mouth. Willowemoc Creek (B-14) enters Beaver Kill at a point 14 miles from its mouth. Beaver Kill (De-16) flows into the East Branch of the Delaware River at a point 16 miles from its juncture with the West Branch to form the Delaware River (D-280) at a point 280 miles from its mouth at Liston Point, Delaware which has been established as the zero point for the Delaware River system. Accordingly, Roscoe, New York is 311 stream miles above the mouth of the Delaware River at Liston Point.

TABLE 1
DELAWARE RIVER BASIN - ZONE 1
Basic Data on Sources of Municipal* Pollution
January 1954

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
DELAWARE RIVER							
Equinunk and Blue Ridge Camp, Wayne Co., Pa.	272	1,000S	N	Secondary	75S	None	New plant completed in 1953
Narrowsburg, N.Y.	240	100E	-	None	-	Sewer System and New Plant	No public sewers; inactive
Port Jervis, N.Y.	205	9,000	N	Secondary	N	None	New plant completed in 1953
Matamoras, Pa.	204	N	-	None	-	Sewer System and New Plant	No public sewers; Final plans approved
Portland, Pa.	157	100E	-	None	-	Sewer System and New Plant	No public sewers; inactive
Easton, Pa.	133	43,800	N	Secondary	N	None	New plant completed in 1952
Phillipsburg, N.J.	133	18,900	N	Secondary	N	None	New plant completed in 1952

E - Estimated; N - Unknown; S - Summer; P.E. - Population Equivalent; B.O.D. - Biochemical Oxygen Demand; W - Winter
* Includes incorporated or unincorporated municipalities; other legal bodies as sanitary districts, counties, towns; significant institutions, resorts, recreational centers or other population centers.

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
Lambertville Sewerage Authority, N.J.	106	4,000E	-	None	-	Sewer System and New Plant	No public sewers, Final plans approved
Mercer Co. Workhouse Trenton, N.J.	88	200E	N	Primary	N	Additions	Final plans approved
WEST BRANCH DELAWARE RIVER D280							
Stamford, N.Y.	82	1,100	N	Primary	N	Additions	Final plans approved in 1935
Hobart, N.Y.	78	700	N	Secondary	N	None	-
Delhi, N.Y.	60	200E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
Walton, N.Y.	42	400E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
Deposit, N.Y.	14	400E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
LITTLE DELAWARE RIVER Dw59							
Bovina Center, N.Y.	8	100E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
TUNIS LAKE OUTLET Ld7							
Tunis Lake Camp, Bovina (T), N.Y.	2	250S	N	Secondary	N	None	New plant completed in 1949
EAST BRANCH DELAWARE RIVER D280							
Roxbury, N.Y.	66	200E	-	None	-	Sewer System and New Plant	No public sewers; Inactive

Margaretville, N.Y.	54	500E	-	None	-	Sewer System and New Plant	No public sewers; Active planning
Downsville Dam, N.Y.	33	250E	N	Secondary	N	None	Temporary plant completed in 1948
West Portal, East Delaware Tunnel, N.Y.	32	200E	N	Secondary	N	None	Temporary plant completed in 1950
Hancock, N.Y.	1	1,000E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
BUSH KILL De57							
New Edgewood Hotel, Fleischmanns, N.Y.	7	100S	N	Secondary	N	None	-
Fleischmanns, N.Y.	6	200E	-	None	-	Sewer System and New Plant	No public sewers; Active planning
Arkville, N.Y.	1	200E	-	None	-	Sewer System and New Plant	No public sewers; Active planning
EMORY BROOK Bu7							
Grand Hotel, Middletown (T), N.Y.	3	500S	N	Secondary	N	None	-
Camp Agudah, Middletown (T), N.Y.	2	250S	N	Secondary	N	None	-
LITTLE RED KILL Bu6							
Camp Ta-Ri-Go, Middletown (T), N.Y.	1	200S	N	Secondary	N	None	-
COLES CLOVE De37							
Camp Brydon Lake, Andes (T), N.Y.	10	100S	N	Secondary	N	None	New plant completed in 1949

Stream Code: D - Delaware River; Dw - West Branch Delaware River (D-280); Ld - Little Delaware River (Dw 59)
De - East Branch Delaware River (D-280); Bu - Bush Kill (De -57)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD Discharged to Watercourse	Treatment Needs	Status, Remarks
BEAVER KILL De 16							
Cooks Falls, N.Y.	10	100E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
Cooks Falls Lodge, Colchester (T), N.Y.	9	250S	N	None	N	New Plant	Final plans approved
WILLOWEMOC CREEK B14							
Hotel Lorraine, Rockland (T), N.Y.	8	75S	N	Primary	N	None	New plant completed in 1950
Willowemoc Hotel, Rockland (T), N.Y.	8	60S	N	None	N	New Plant	Final plans approved
Livingston Manor, N.Y.	7	100E	N	None	N	New Plant	Inactive
Roscoe, N.Y.	1	1,300S (600W)	N	Primary	N	None	-
SPRAGUE BROOK W9							
Our Lady of Lourdes Camp, Rockland(T),N.Y.	7	175S	N	Secondary	N	None	-
Camp Acadia, Rockland, (T), N.Y.	6	175S	N	Secondary	N	None	-
Camp Raleigh-Maccabee, Rockland (T), N.Y.	2	175S	N	Secondary	N	None	New plant completed in 1949
MINE BROOK Sp3							
White Roe Lake Hotel, Rockland (T), N.Y.	2	550S	N	Secondary	N	None	New plant completed in 1947

LITTLE BEAVER KILL W7							
Mickey's Bungalows, Liberty (T), N.Y.	6	40S	N	Secondary	N	None	New plant completed in 1948
Parksville, N.Y.	5	200E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
LILY POND BROOK Lb6							
Mt. Pleasant House, Liberty (T), N.Y.	2	175S	N	Secondary	N	None	New plant completed in 1951
Lash Hotel, Liberty (T), N.Y.	1	410S	N	Secondary	N	None	New plant completed in 1953
SHAW POND BROOK Lb5							
Maple View House, Liberty (T), N.Y.	1	90S	N	Secondary	N	None	New plant completed in 1948
BENTON HOLLOW BROOK Lb4							
Park Inn, Liberty (T), N.Y.	1	70S	N	Secondary	N	None	New plant completed in 1949
Klein's Hillside, Liberty (T), N.Y.	1	550S	N	Secondary	N	None	-
Fox Mountain House, Liberty (T), N.Y.	1	80S	N	None	N	New Plant	Final plans approved
TRIB. TO LITTLE BEAVER KILL Lb3							
Brookdale House, Rockland (T), N.Y.	2	50S	N	Secondary	N	None	New plant completed in 1953

Stream Code: B - Beaver Kill (De - 16); W - Willowemoc Creek (B - 14); Sp - Sprague Brook (W - 9); Lb - Little Beaver Kill (W - 7).

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
Beaver Lake Lodge, Rockland (T), N.Y.	1	190S	N	Secondary	N	None	New plant completed in 1950
SHANDALEE BROOK Ca2							
Waldmere Hotel, Calicoon (T), N.Y.	2	390S	N	Secondary	N	None	-
Lake View Rest, Calicoon (T), N.Y.	2	110S	N	Secondary	N	None	New plant completed in 1948
Shandalee Camp, Calicoon (T), N.Y.	2	175S	N	Secondary	N	None	-
TROUT BROOK B2							
Tennanah Lake House, Fremont (T), N.Y.	8	450S	N	Secondary	N	None	-
BOUCHOUX BROOK D269							
Camp Pine Cone, Hancock (T), N.Y.	3	80S	N	Secondary	N	None	New plant completed in 1950
Camp Deerhead, Hancock (T), N.Y.	3	350S	N	Secondary	N	None	New plant completed in 1949
HANKINS CREEK D263							
Crystal Lake Adult Camp, Fremont (T), N.Y.	6	200S	N	Secondary	N	None	-

TRIB. TO DELAWARE RIVER D257							
St. Josephs Seraphic Seminary, Delaware (T), N.Y.	1	150	N	Secondary	N	None	-
CALLICOON CREEK D256							
Callicoon, N.Y.	1	200E	N	None	N	New Plant	Inactive
EAST BRANCH CALLICOON CREEK C1							
Youngsville, N.Y.	15	200E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
Jeffersonville, N.Y.	11	200E	-	None	-	Sewer System and New Plant	No public sewers; Inactive
HORSESHOE BROOK Ce17							
Lesser Lodge, Liberty (T), N.Y.	1	180S	N	Secondary	N	None	New plant completed in 1947
CATTAIL BROOK Ce15							
The Waverly, Callicoon (T), N.Y.	4	60S	N	Secondary	N	None	New plant completed in 1946
Lakeside House, Callicoon (T), N.Y.	4	80S	N	Secondary	N	None	New plant completed in 1946
TRIB. TO EAST BRANCH CALLICOON CREEK Ce14							
Blum's Orchard Grove Callicoon (T), N.Y.	1	50S	N	Secondary	N	Chlorination	New plant completed in 1949; Inactive
Chasin's Hemlock Grove House, Callicoon (T), N.Y.	1	40S	N	Secondary	N	Chlorination	New plant completed in 1949; Inactive

Stream Code: Ca - Cattail Brook (W-6); C - Callicoon Creek (D-256);
Ce - East Branch Callicoon Creek (C-1).

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
SEGAR POND OUTLET Ce12							
East Hill House, Liberty (T), N.Y.	2	50S	N	None	N	New Plant	Final plans approved
DiMontova Bungalows, Bethel (T), N.Y.	1	20S	N	None	N	New Plant	Final plans approved
HUST POND OUTLET Ce11							
Shady Nook House, Callicoon (T), N.Y.	2	40S	N	Secondary	N	None	New plant completed in 1948
KENOZA LAKE STREAM Ce8							
Pine Lake Lodge, Delaware (T), N.Y.	2	60S	N	Secondary	N	None	-
Valley View House, Delaware (T), N.Y.	1	75S	N	Secondary	N	Chlorination	New plant completed in 1948; Inactive
Sackman House, Delaware (T), N.Y.	1	130S	N	None	N	New Plant	Final plans approved
MITCHELL POND BROOK D244							
Holtzman's Cottages, Cochecton (T), N.Y.	2	40S	N	Secondary	N	None	New plant completed in 1950
NARROWSBURG LAKE STREAM D240							
Hillside Inn, Tusten (T), N.Y.	1	100S	N	Secondary	N	None	New plant completed in 1950

Silver Spring Manor, Tusten (T), N.Y.	1	30S	N	Secondary	N	Chlorination	New plant completed in 1947; Inactive
Bellewood Cottages, Tusten (T), N.Y.	1	50S	N	None	N	New Plant	Final plans approved
TEN MILE RIVER D237							
Lake Huntington, N.Y.	10	4,500S	N	Secondary	N	None	New plant completed in 1951
Homestead Hotel, Tusten (T), N.Y.	6	50S	N	Secondary	N	None	New plant completed in 1953
Sparrow Lake Cottage, Tusten (T), N.Y.	3	20S	N	Secondary	N	None	New plant completed in 1948
NEBRASKA BROOK T-10							
Mountain View House, Cochecton (T), N.Y.	3	70S	N	Secondary	N	None	New plant completed in 1948
Alpine Haven, Cochecton (T), N.Y.	3	60S	N	Secondary	N	None	New plant completed in 1953
BRADY BROOK Te6							
Boy Scouts of America, Bronx Camp, N.Y.	1	500S	N	Secondary	N	None	-
ROCK LAKE STREAM T1							
Boy Scouts of America, Brooklyn Camp, N.Y.	1	900S	N	Secondary	N	None	New plant completed in 1950
LACKAWAXEN RIVER D230							
Honesdale, Pa.	24	7,000	7000E	None	7000E	New Plant	Active planning

Stream Code: T - Ten Mile River (D-237); Te - East Branch Ten Mile River (T-2)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
MIDDLE CREEK La14							
Farview State Hospital Canaan Twp., Wayne Co., Pa.	1	1,500E	N	Secondary	300E	Enlargement	Active planning
BEAVER BROOK D226							
Cantwell's West Shore Cottage, Highland (T), N.Y.	3	130S	N	Secondary	N	None	New plant completed in 1947
CRYSTAL LAKE Be11							
Boy Scouts of America, Queens Camp, N.Y.	1	500S	N	Secondary	N	None	New plant completed in 1951
DUNN BROOK Be5							
Boy Scouts of America, Headquarters Ten Mile River Camp, N.Y.	3	250S	N	Secondary	N	None	New plant completed in 1951
WASHINGTON LAKE Be4							
Yulan Hotel, Highland (T), N.Y.	1	100S	N	Secondary	N	None	New plant completed in 1947
HIGHLAND LAKE Ha5							
Highland Lake Bible Conference Camp, Highland (T), N.Y.	2	200S	N	Secondary	N	None	New plant completed in 1948
Pine Beach Inn, Highland (T), N.Y.	2	50S	N	Secondary	N	None	New plant completed in 1947

Sunset View Lodge, Highland (T), N.Y.	2	50S	N	Secondary	N	None	New plant completed in 1949
Rudolph Kistner, Highland (T), N.Y.	2	50S	N	None	N	New Plant	Final plans approved
LOCHODA LAKE Mi4							
Brookwood Camp, Lumberland (T), N.Y.	2	300S	N	Secondary	N	None	New plant completed in 1949; 2 systems
Camp Lokanda, Lumberland (T), N.Y.	2	240S	N	Secondary	N	None	New plant completed in 1947
American Ukrainian Resort Center, Lumberland (T), N.Y.	2	200S	N	Secondary	N	None	New plant completed in 1953
TRIB. TO MILL BROOK Mil							
The Pythian Camp, Lumberland (T), N.Y.	1	400S	N	Secondary	N	None	New plant completed in 1946
Camp Mohaph, Lumberland (T), N.Y.	1	500S	N	Secondary	N	None	New plant completed in 1950
DIANA LAKE STREAM D217							
Camp Diana, Lumberland (T), N.Y.	1	290S	N	Secondary	N	None	-
MONGAUP RIVER D212							
Liberty, N.Y.	30	12,000S (5000W)	N	Secondary	N	None	-
TRIBS. TO MONGAUP RIVER M28							
Marko Manor, Liberty (T), N.Y.	-	75S	N	Secondary	N	None	New plant completed in 1949

Stream Code: La - Lackawaxen River (D-230); Be - Beaver Brook (D-226); Ha - Halfway Brook (D-224); Mi - Mill Brook (D-218); M - Mongaup River (D-212)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
Empire Hotel, Liberty (T), N.Y.	-	250S	N	Secondary	N	None	New plant completed in 1949
Helen's Bungalows, Liberty (T), N.Y.	-	50S	N	Secondary	N	None	New plant completed in 1949
Kanco Inn, Liberty (T), N.Y.	-	170S	N	Secondary	N	None	New plant completed in 1953
Parkview House, Liberty (T), N.Y.	-	170S	N	Secondary	N	None	-
Lilmore Hotel, Liberty (T), N.Y.	-	140S	N	Secondary	N	None	New plant completed in 1952
Wiss Wigwam Bungalow Colony, Liberty (T),N.Y.	-	100S	N	Secondary	N	None	New plant completed in 1948
Leonards Lodge, Liberty (T), N.Y.	-	100S	N	Secondary	N	None	New plant completed in 1952
TRIB. TO MONGAUP RIVER	M26						
Kappy's Cottage, Bethel (T), N.Y.	-	90S	N	Secondary	N	None	New plant completed in 1949
Adler's Bungalows, Liberty (T), N.Y.	-	75S	N	None	N	New Plant	Under Construction
National Hotel, Bethel (T), N.Y.	-	250S	N	None	N	New Plant	Final plans approved
EAST BRANCH MONGAUP RIVER	M24						
Workman's Circle Sanitorium, Liberty (T), N.Y.	7	60S	N	Secondary	N	None	-

Arcadia Lake Hotel, Fallsburgh (T), N.Y.	5	150S	N	None	N	New Plant	Final plans approved
Hurleyville, N.Y.	5	200E	N	None	N	New Plant	Inactive
Forest Inn, Fallsburgh (T), N.Y.	5	240S	N	Secondary	N	None	New plant completed in 1947
TROUT BROOK Me 11							
Lakeside Inn, Liberty (T), N.Y.	-	430S	N	Secondary	N	None	New plant completed in 1948
Brentwood Bungalows, Liberty (T), N.Y.	-	30S	N	Secondary	N	None	New plant completed in 1951
Home Crest, Liberty (T), N.Y.	-	30S	N	Secondary	N	None	New plant completed in 1950
High View House, Liberty (T), N.Y.	-	40S	N	None	N	New Plant	Under construction
Malachowsky Farm House, Liberty (T) N.Y.	-	40S	N	None	N	New Plant	Final plans approved
HILLDALE POND BROOK Me 6							
Brown's Hotel & Country Club, Fallsburgh (T) N.Y.	5	430S	N	Secondary	N	Additions	Under construction
Anshiens Bungalows, Fallsburgh (T), N.Y.	5	40S	N	Secondary	N	None	-
Columbia House Hotel, Fallsburgh (T), N.Y.	4	30S	N	Secondary	N	None	New plant completed in 1947
SPRING BROOK Me 1							
Normandie Hotel Liberty (T), N.Y.	-	260S	N	None	N	New Plant	Final plans approved

Stream Code: Me - East Branch Mongaup River (M-24).

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
Butler Lodge, Thompson (T), N.Y.	-	160S	N	Secondary	N	None	New plant completed in 1951
Cameo Country Club, Thompson (T), N.Y.	-	170S	N	Secondary	N	None	New plant completed in 1949
WEST BRANCH MONGAUP RIVER M 20							
Swan Lake - Stevensville San. Dist., N.Y.	-	4,000S (500W)	N	Secondary	N	None	New plant completed in 1953
TRIBS. TO SWAN LAKE Mw 7							
Rose Cottage, Liberty (T), N.Y.	-	100S	N	Secondary	N	Chlorination	New plant completed in 1946; Inactive
Hecht Bros. Lodging House, Liberty (T), N.Y.	-	30S	N	None	N	New Plant	Final plans approved
Ruth's Cottages, Liberty (T), N.Y.	-	50S	N	Secondary	N	None	New Plant completed in 1952
New Deal Villa, Liberty (T), N.Y.	-	50S	N	Secondary	N	None	New plant completed in 1953
Weber House, Liberty, (T), N.Y.	-	40S	N	Secondary	N	None	-
Mollie's Famous Rooming House, Liberty, (T), N.Y.	-	100S	N	None	N	New Plant	Under construction
White Sulphur Springs, N.Y.	-	200E	-	None	-	Sewer System and New Plant	Inactive

KINNE BROOK M 15							
Strolovitz Lake Colony, Thompson (T), N.Y.	-	110S	N	Secondary	N	None	New plant completed in 1951
Skliars Hotel, Thompson (T), N.Y.	-	240S	N	Secondary	N	None	New plant completed in 1949
Hungarian House, Thompson (T), N.Y.	-	80S	N	Minor	N	Connect to Monticello Sewer System	Final plans approved
Wolfs Corners Bungalow Colony, Thompson, (T), N.Y.	-	150S	N	Secondary	N	Additions	Undetermined
Star Mountain House, Thompson (T), N.Y.	-	90S	N	Secondary	N	None	New plant completed in 1950
Norman House, Thompson (T), N.Y.	-	100S	N	Secondary	N	None	New plant completed in 1948
Discount Bungalows, Thompson (T), N.Y.	-	140S	N	Secondary	N	None	-
Falzuck Acres, Thompson, (T), N.Y.	-	130S	N	Secondary	N	None	New plant completed in 1949
Hamilton Acres, Thompson (T), N.Y.	-	120S	N	None	N	New Plant	Final plans approved
BURNT MEADOW BROOK M 14							
Camp Ta-Go-La, Thompson (T), N.Y.	3	510S	N	Secondary	N	None	-
WHITE LAKE BROOK M 14							
White Lake Lodge, Bethel (T), N.Y.	9	75S	N	Secondary	N	None	New plant completed in 1949

Stream Code: Mw - West Branch Mongaup River (M-20)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
Kauneonga Lake, S.D., N.Y.	7	3,000S (500W)	N	Secondary	N	None	Enlargement completed in 1952
Wynick's Lodging House, Bethel (T), N.Y.	5	80S	N	Secondary	N	None	-
JUDSON BROOK Wh 6							
Schreiberville, Bethel (T), N.Y.	-	150S	N	Secondary	N	None	New plant completed in 1946
Camp Chipinaw, Bethel (T), N.Y.	-	300S	N	Secondary	N	Additions	New plant completed in 1953; Undetermined
Rosenberg's Bungalows, Bethel (T), N.Y.	-	30S	N	Secondary	N	Chlorination	New plant completed in 1951; Inactive
Truman's Bungalow Colony, Bethel (T) N.Y.	-	50S	N	Secondary	N	None	New plant completed in 1949
Balcony House, Bethel (T), N.Y.	-	40S	N	Secondary	N	None	New plant completed in 1951
SACKETT LAKE BROOK M 12							
Sackett Lake, S.D., N.Y.	3	2,000S	N	Secondary	N	None	New plant completed in 1952
BLACK LAKE BROOK M 11							
Camp Ge-Wah-Na, Bethel (T), N.Y.	-	125S	N	Secondary	N	None	New plant completed in 1948
Camp Ranger, Bethel (T), N.Y.	-	225S	N	Secondary	N	None	New Plant completed in 1952

Garden Cottages, Bethel (T), N.Y.	-	30S	N	None	N	New Plant	Final plans approved
Sharp's Bungalows, Bethel (T), N.Y.	-	25S	N	Secondary	N	None	New plant completed in 1949
TORONTO LAKE BROOK Bl 6							
Boy Scouts of America, Camp Manhattan, N.Y.	1	600S	N	Secondary	N	None	-
BLACK BROOK M 8							
St. Josephs (V) N.Y.	5	500	N	Primary	N	None	-
TRIB. TO BLACK BROOK Bb 2							
Linksman Utopia Villa, Thompson (T) N.Y.	1	50S	N	Secondary	N	None	New plant completed in 1953
SHINGLE KILL D 210							
Tarini Farm, Deerpack (T), N.Y.	2	125S	N	Secondary	N	None	New plant completed in 1947
NEVERSINK RIVER D 206							
Nelson Bungalows, Fallsburgh (T), N.Y.	37	30S	N	Secondary	N	None	New plant completed in 1951
The Branch House, Fallsburgh (T), N.Y.	37	80S	N	Secondary	N	None	New plant completed in 1947
Woodbourne Prison, Woodbourne, N.Y.	36	600E	N	Secondary	N	None	-
Woodbourne, N.Y.	35	200E	-	None	-	Sewer System and New Plant	No public sewers; Final plans approved
Regal Hotel, Fallsburgh (T), N.Y.	33	250S	N	Secondary		None	-

STREAM CODE: Wh - White Lake Brook (M-14); Bl - Black Lake Brook (M-11); Bb - Black Brook (M-8)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
King David Hotel, Fallsburgh (T), N.Y.	33	290S	N	Secondary	N	None	-
Saxony Hotel, Fallsburgh (T), N.Y.	32	300S	N	Secondary	N	None	-
Avon Lodge, Fallsburgh (T), N.Y.	32	340S	N	Secondary	N	None	-
Kay's Colony, Fallsburgh (T), N.Y.	32	30S	N	Secondary	N	None	New plant completed in 1953
Cooper's, Fallsburgh (T), N.Y.	32	20S	N	Secondary	N	None	New plant completed in 1949
Furst Hotel, Fallsburgh (T), N.Y.	32	300S	N	Primary	N	Additions	Under State Health Dept. order; Undetermined
Ambassador Hotel, Fallsburgh (T), N.Y.	32	350S	N	Secondary	N	None	-
Pine View Hotel, Fallsburgh (T), N.Y.	32	150S	N	Secondary	N	None	-
Flagler Hotel, Fallsburgh (T), N.Y.	31	630S	N	Secondary	N	None	-
Elm Shade Bungalows, Fallsburgh (T), N.Y.	31	200S	N	Secondary	N	None	New plant completed in 1948
Riverside Apts., Fallsburgh (T), N.Y.	31	50S	N	Secondary	N	None	New plant completed in 1948
South Fallsburgh, N.Y.	30	10,000S (500W)	N	Secondary	N	Enlargement	Active planning

TRIB. TO NEVERSINK RIVER N 35							
Woodbourne Sky House, Fallsburgh (T), N.Y.	2	120S	N	Secondary	N	Additions	Under State Health Dept. order; Undetermined
Maple Lawn Hotel, Fallsburgh (T), N.Y.	1	125S	N	Secondary	N	None	-
Sunny Hill Bungalows, Fallsburgh (T), N.Y.	1	50S	N	None	N	New Plant	Final plans approved
EAST POND BROOK N 34							
Oretsky's Bungalow Colony, Fallsburgh (T) N.Y.	2	30S	N	Secondary	N	None	New plant completed in 1953
East Pond Cottages, Fallsburgh (T), N.Y.	2	120S	N	Secondary	N	None	New plant completed in 1952
TRIB. TO NEVERSINK RIVER N 33							
Prospect Palace, Fallsburgh (T), N.Y.	1	100S	N	Secondary	N	None	New plant completed in 1949
Olympic Hotel, Fallsburgh (T), N.Y.	1	150S	N	Secondary	N	Replacement	Under construction
FOWLWOOD BROOK N 28							
Glen Wild Hotel & C.C., Thompson (T), N.Y.	2	225S	N	Secondary	N	None	-
Coronet Hotel, Thompson, (T), N.Y.	1	300S	N	Secondary	N	None	-
TRIB. TO FOWLWOOD BROOK F 2							
Cantor & Greenburg Colony, Thompson (T) N.Y.	-	50S	N	Secondary	N	None	New Plant completed in 1952

Stream Code: N - Neversink River (N-35); F - Fowlwood Brook (N-28)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
Dresslers Bungalows, Thompson (T), N.Y.	-	25S	N	Primary	N	Additions	Final plans approved
Chaikin House, Thompson (T), N.Y.	-	70S	N	Secondary	N	None	-
SHELDRAKE STREAM N 27							
Play Rest, Fallsburgh (T), N.Y.	9	190S	N	Secondary	N	None	New plant completed in 1946
Loch Sheldrake Park, N.Y.	8	3,000S	N	Secondary	N	None	Enlargement completed in 1952
Morningside Hotel, Fallsburgh (T), N.Y.	5	450S	N	Secondary	N	None	-
Brookside Hotel, Fallsburgh (T), N.Y.	5	260S	N	Secondary	N	None	-
LOCH SHELDRAKE BROOK S 6							
Loch Sheldrake, N.Y.	2	5,500S	N	Secondary	N	None	-
Hochrats Bungalow Colony, Fallsburgh, (T), N.Y.	2	75S	N	Secondary	N	None	New plant completed in 1950
TRIB. TO SHELDRAKE STREAM S 5							
Cedar Hill Hotel, Fallsburgh (T), N.Y.	-	110S	N	Secondary	N	None	New plant completed in 1948
Grandview Hotel, Fallsburgh (T), N.Y.	-	170S	N	Secondary	N	None	New plant completed in 1949

Moonglow Inn, Fallsburgh (T), N.Y.	-	100S	N	None	N	New Plant	Final plans approved
Hotel Brickman, Fallsburgh (T), N.Y.	-	500S	N	Secondary	N	None	-
Park Manor, Fallsburgh, (T), N.Y.	-	140S	N	Secondary	N	None	-
Herman Singer Bungalows Fallsburgh (T), N.Y.	-	50S	N	None	N	New Plant	Final plans approved
TRIB. TO PLEASURE LAKE S 3							
Greenwood Park Bungalows, Fallsburgh (T) N.Y.	-	150S	N	None	N	New Plant	Under construction
Sunnyside Cottages, Fallsburgh (T), N.Y.	-	20S	N	Secondary	N	Chlorination	New plant completed in 1953; Undetermined
Morgan's Ideal Cottages, Fallsburgh (T) N.Y.	-	50S	N	Secondary	N	None	New plant completed in 1949
KIAMESHA CREEK S 2							
Kiamesha S.D., N.Y.	4	3,500S (500W)	N	Secondary	N	None	New plant completed in 1952
Concord Hotel Thompson (T), N.Y.	3	500	N	Secondary	N	None	New plant completed in 1947
Schenk's Paramount Hotel, Thompson (T) N.Y.	2	250S	N	Secondary	N	None	New plant completed in 1948; 2 systems
ANAWANA BROOK K 3							
Anawana Beach Colony Thompson (T), N.Y.	3	125S	N	Secondary	N	None	New plant completed in 1952

Stream Code: S - Sheldrake Stream (N-27); K - Kiamesha Creek (S-2)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
Altmans Bungalows, Thompson (T), N.Y.	3	50S	N	Secondary	N	Chlorination	New plant completed in 1950; Inactive
Camp Anawanna, Thompson (T), N.Y.	3	300S	N	Secondary	N	None	New plant completed in 1949
TRIB. TO ANAWANA BROOK A	3						
Kutshers Country Club, Thompson (T), N.Y.	-	300S	N	Secondary	N	None	-
Willow Lane Hotel, Thompson (T), N.Y.	-	200S	N	Secondary	N	Additions	Active planning
Brown's Sunny Hill Colony, Thompson (T) N.Y.	-	50S	N	Secondary	N	None	New plant completed in 1951
Kaufman's Manor, Thompson (T), N.Y.	-	80S	N	Secondary	N	None	New plant completed in 1949
Vapneck Bros., Thompson (T), N.Y.	-	70S	N	Secondary	N	None	New plant completed in 1951
Rosemont Hotel, Thompson (T), N.Y.	-	200S	N	Secondary	N	None	-
Klein Bungalow Colony, Thompson (T), N.Y.	-	75S	N	Secondary	N	None	New plant completed in 1953
Silberts Lodging House, Thompson (T), N.Y.	-	50S	N	Secondary	N	None	New plant completed in 1950
COLD SPRING BROOK K	2						
Monticello, N.Y.	-	14,000S (5,000W)	N	Secondary	N	None	New plant completed in 1951

Altbrook Lodge, Thompson (T), N.Y.	-	50S	N	Secondary	N	None	New Plant completed in 1949
ROXBURY CREEK Co 1							
Joyland Hotel, Thompson (T), N.Y.	-	240S	N	Secondary	N	None	New Plant completed in 1948
Hoffmans Bungalows, Thompson (T), N.Y.	-	50S	N	Secondary	N	None	-
TRIB. TO SHELDRAKE STREAM S 1							
Heiden Hotel, Fallsburgh (T), N.Y.	2	290S	N	Primary	N	Additions	Final plans approved
River Haven, Thompson (T), N.Y.	1	60S	N	Secondary	N	Chlorination	New plant completed in 1953; Undetermined
Commodore Hotel, Thompson (T), N.Y.	1	290S	N	Secondary	N	None	New plant completed in 1949
BUSH KILL N 15							
Starlight Bungalows, Thompson (T), N.Y.	2	80S	N	Secondary	N	None	New plant completed in 1951
Eidell Modern Bungalow Colony, Thompson (T), N.Y.	1	100S	N	Secondary	N	None	New plant completed in 1952
TRIB. TO NEVERSINK RIVER N 11							
Paradise Farm, Deerpark (T), N.Y.	1	80S	N	Secondary	N	None	New plant completed in 1948
Camp Talcott, Deerpark (T), N.Y.	1	200S	N	Secondary	N	None	New plant completed in 1952
PRIMROSE BROOK Ba 14							
Mountain View Hotel, Mamakating (T), N.Y.	5	110S	N	Secondary	N	None	New plant completed in 1953

Stream Code: A - Anawana Brook (K-3); Co - Cold Spring Brook (K-2); Ba - Basher Kill (N-10)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
WILLSEY BROOK Ba 11							
Blue Paradise, Mamakating (T), N.Y.	5	80S	N	Secondary	N	None	New plant completed in 1951
PINE KILL Ba 7							
Masten Lake Bungalow Colony, Mamakating (T), N.Y.	8	50S	N	Secondary	N	None	-
SAWKILL CREEK D 176							
Felix Fuld Camp, Dingman Twp., Pike Co., Pa.	3	750S	N	Secondary	65S	None	New plant completed in 1948
Log Tavern Camp, Dingman Twp., Pike Co., Pa.	3	1,000S	N	Secondary	75S	None	New plant completed in 1950
BRODHEAD CREEK D 164							
Stroudsburg, Pa.	2	6,500	N	Secondary	650E	Enlargement	Final plans approved; contract to be awarded in 1954
LEAVITT BRANCH Br 19							
Sky Top Lodge, Barrett Twp., Monroe Co., Pa.	2	650S	N	Secondary	65E	None	Enlargement completed in 1951
BUCKHILL CREEK Br 19							
Buckhill Falls Inn, Barrett Twp., Monroe Co., Pa.	1	2,000S	N	Secondary	100E	None	New plant completed in 1950

SWIFTWATER CREEK Br 10							
Pocono Manor Assn., Pocono Twp., Monroe Co., Pa.	8	850S	N	Secondary	85E	Enlargement	Inactive
SAMBO CREEK Br 4							
East Stroudsburg, Pa.	1	N	-	None	-	Sewer System and New Plant	Final plans approved
East Stroudsburg Sewer Co., East Stroudsburg, Pa.	1	1,000E	N	Minor	650E	Replacement	Active planning; disposition pending borough action
CHERRY CREEK D 161							
Delaware Water Gap, Pa.	1	N	-	None	-	Undetermined	No public sewers
PAULINS KILL D 159							
Newton, Clinton St., N.J.	21	5,000E	9,480	Secondary	1,500	None	Under construction; Sparta St. plant to be abandoned and sewage diverted to Clinton St. plant
Newton, Sparta St., N.J.	21	1,300E	2,028	Secondary	666	Enlargement	
Blair Academy, Blairstown, N.J.	7	100E	N	Minor	N	Undetermined	-
MARTINS CREEK D 140							
East Bangor, Pa.	8	150E	-	None	-	Undetermined	No public sewers
Bangor, Pa.	6	1,000E	-	None	-	Sewer System and New Plant	No public sewers; active planning
Martins Creek, Pa.	1	50E	-	None	-	Undetermined	No public sewers

Stream Code: Br - Brodhead Creek (D-164)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
WALTZ CREEK Ma 4							
Pen Argyl, Pa.	3	1,500E	-	None	-	Sewer System and New Plant	Private sewers only; Inactive
Ackermanville, Pa.	1	50E	-	None	-	Undetermined	No public sewers
BUSHKILL CREEK D 136							
Stockertown, Pa.	7	125E	-	None	-	Undetermined	No public sewers
Tatamy, Pa.	6	50E	-	None	-	Undetermined	No public sewers
SHOENECK CREEK Bc 5							
Nazareth, Pa.	6	5,830E	N	Secondary	N	None	-
LEHIGH RIVER D 135							
White Haven, Pa.	63	1,500	N	None	1500E	New plant	Final plans approved
Carbon Co. Institutional District, Lehigh Twp., Pa.	50	375E	N	Primary	100E	None	-
East Mauch Chunk, Pa.	40	3,000E	N	None	N	New plant	Final plans approved
Mauch Chunk, Pa.	40	2,500E	N	None	N	New plant	Final plans approved
Lehighton, Pa.	37	6,600E	N	Primary	400E	None	New plant completed in 1953
Weissport, Pa.	37	100E	-	None	-	Undetermined	No public sewers

Parryville, Pa.	35	100E	-	None	-	Undetermined	No public sewers
Bowmanstown, Pa.	34	150E	-	None	-	Undetermined	No public sewers
Slatington, Pa.	28	500E	N	None	N	New Plant	Undetermined
Walnutport, Pa.	27	300E	N	None	N	New Plant	Undetermined
Cementon, Pa.	19	75E	-	None	-	Undetermined	No public sewers
Coplay, Pa.	18	600E	N	None	N	New plant	Inactive
Hokendaugua, Pa.	17	50E	-	None	-	Undetermined	No public sewers
North Catasauqua, Pa.	17	500E	N	None	N	Connect to municipal sewer system	Active planning to enter Catasauqua sewer system
Fullerton, Pa.	16	150E	N	None	N	New plant	Inactive
Catasauqua, Pa.	15	1,000E	N	None	N	New plant	Active planning
Allentown, Pa.	13	90,000	N	Secondary	N	None	Additions completed in 1953
Allentown State Hospital, Allentown, Pa.	13	2,350E	N	Secondary	N	None	New plant completed in 1950
Bethlehem, Pa.	10	79,000	N	Secondary	N	None	New plant completed in 1953
TOBYHANNA CREEK L 71							
Pocono Crest, Tobyhanna Twp., Monroe Co., Pa.	16	600S	N	Secondary	60E	None	Additions completed in 1948

Stream Code: Ma - Martins Creek (D-140); Bc - Bushkill Creek (D-136); L - Lehigh River (D-135)

TABLE 1 (Cont.)

Name and Location	River Mile Above Mouth	Population Served by Sewers	P.E.(BOD) Untreated Wastes	Waste Treatment Provided	P.E.(BOD) Discharged to Watercourse	Treatment Needs	Status, Remarks
LINESVILLE CREEK L 62							
White Haven Sanitarium, Forster Twp., Luzerne Co., Pa.	1	400E	N	Secondary	40E	None	-
SANDY RUN L 59							
Freeland, Pa.	2	2,000E	-	None	2000E	New plant	Final plans approved
BLACK CREEK L 47							
Weatherly, Pa.	1	500E	-	None	N	Sewer System and New Plant	No public sewers; acid stream; inactive
HAZLE CREEK Bk 6							
Hazleton, Pa.	4	20,000E	-	None	20,000E	New plant	Final plans approved; Acid stream
NESQUEHONING CREEK L 42							
Nesquehoning, Pa.	1	N	-	None	-	Undetermined	No public sewers; Acid stream
AQUASHICOLA CREEK L 32							
Palmerton Disposal Co., Palmerton, Pa.	1	7,500E	N	Secondary	N	Enlargement	Active planning
HOKENDAUGUA CREEK L 18							
Northampton, Pa.	1	9,330E	N	Primary	N	Additions	Final plans approved
LITTLE LEHIGH RIVER L 12							
Emmaus, Pa.	2	N	-	None	-	Undetermined	No public sewers

CEDAR CREEK Ll 3							
Lehigh County Home. Lehigh Co., Pa.	2	300E	-	Primary (Sub-surface)	N	Replacement	Active planning
POHATCONG CREEK D 129							
Washington, N.J.	17	5,300	8,100	Secondary	2,214	None	Additions completed in 1951
TOHICKON CREEK D 113							
Quakertown, Pa.	18	5,000E	7,400E	Secondary	1,500E	Enlarge-ment	Under Sanitary Water Board order; Final plans approved
EWING CREEK D 93							
N.J. State Hospital Colony, Ewing Twp., N.J.	4	600E	N	Secondary	N	None	-
GOLD RUN D 90							
N.J. State Highway Dept., Ewing Twp., N.J.	1	50E	N	Secondary	N	None	New plant completed in 1950
ASSUNPINK CREEK D 86							
Roosevelt, N.J.	25	800	300	Secondary	30	None	-
N.J. State Teachers College, Ewing Twp., N.J.	6	200	400	Secondary	75	None	-
SHABAKUNK CREEK As 4							
Ewing and Lawrence Twp. Sewerage Auth-ority Plant, N.J.	6	16,800	N	Secondary	N	None	New plant completed in 1953

Stream Code: Bk - Black Creek (L-47); Ll - Little Lehigh River (L-12); As - Assunpink Creek (D-86)

TABLE 2
DELAWARE RIVER BASIN - ZONE 1
Basic Data on Sources of Industrial* Pollution
January 1954

Name and Location	Mouth	Type of Industry	Type Waste Produced	Degree of Treatment	P.E.(BOD) Discharged to Watercourse	Pollution Abatement Needs	Status, Remarks
DELAWARE RIVER							
Dairymen's League Coop. Assn., Calicoon, N.Y.	254	Food (Dairy)	Organic	None	100 E	New plant	Inactive
Borden's Farm Products Co., Cochecton, N.Y.	248	Food (Dairy)	Organic	None	N	New plant	Inactive
Janssen Dairy Corp. Knowlton Twp., N.J.	158	Food (Dairy)	Organic	Secondary	75	Enlargement	Active planning for new process
Celanese Corp., Belvidere, N.J.	147	Chemical	Organic San. Sewage	Secondary	10	None	-
Baker Chemical Co. Phillipsburg, N.J.	133	Chemical	Inorganic	None	N	New plant	Active planning
Riegel Paper Co., Riegelsville, N.J.	126	Paper	Organic	Minor (Save alls)	8,800	Additions	Active planning; design to be based on results at Warren Glen treatment process
Riegel Paper Co. Milford, N.J.	117	Paper	Organic	Minor (Save alls)	52,700	Additions	Active planning; design to be based on results from Warren Glen treatment process

*Industries having separate outlets and discharging wastes directly to watercourse.

Frenchtown Porcelain Co., Frenchtown, N.J.	114	Misc.	Organic	None	15	None	-
Union Mills Paper Mfg. Co., New Hope, Pa.	106	Paper	Organic	Intermediate	11,200 E	Additions	Final plans submitted
Bucks Co. Farm Dairies, Morrisville, Pa.	93	Food (Dairy)	Organic	None	N	New plant	Under Sanitary Water Board order; active planning
U. S. Navy Aeronautical Testing Laboratories, Ewing Twp., N.J.	88	Misc.	Organic	Secondary	N	None	(May not be in operation as yet)
WEST BRANCH DELAWARE RIVER D 280							
Rothenberg Packing Co., Hobart, N.Y.	70	Food (Dairy)	Organic	None	N	New plant	Inactive
MacIntosh Slaughter House, Bloomville, N.Y.	68	Food (Dairy)	Organic	Minor	N	Replacement	Inactive
MacIntosh Abattoir Bloomville, N.Y.	68	Food (Dairy)	Organic	Minor	N	Replacement	Inactive
Dairymen's League Coop. Assn., Delhi, N.Y.	60	Food (Dairy)	Organic	Primary	N	Undetermined	-
Delaware Co. Farmers Coop. Assn., Delhi, N.Y.	60	Food (Dairy)	Organic	Primary	N	Undetermined	-

Stream Code: D - Delaware River

TABLE 2 (Cont.)

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Degree of Treatment	P.E.(BOD) Discharged to Watercourse	Pollution Abatement Needs	Status, Remarks
Middletown Milk & Cream Co., Frazers, N.Y.	55	Food (Dairy)	Organic	Primary	N	Undetermined	-
Ferndale Farms Co., Hamden, N.Y.	52	Food (Dairy)	Organic	Primary	N	Undetermined	-
Sheffield Farms, Inc., Walton, N.Y.	42	Food (Dairy)	Organic	Primary	N	Undetermined	-
Dairymen's League Coop. Assn., Walton, N.Y.	42	Food (Dairy)	Organic	Primary	N	Undetermined	-
Queens Farm Dairy, Cannonsville, N.Y.	22	Food (Dairy)	Organic	None	N	New plant	Inactive
LITTLE DELAWARE RIVER Dw 55							
Bovina Center Coop. Dairy, Bovina Center, N.Y.	8	Food (Dairy)	Organic	None	N	New plant	Inactive
THIRD BROOK Dw 38							
Breakstone Bros., Inc., Walton, N.Y.	1	Food (Dairy)	Organic	Primary	N	Additions	Inactive
Middletown Milk & Cream Co., Walton, N.Y.	1	Food (Dairy)	Organic	None	N	New plant	Inactive

TROUT CREEK Dw 21							
Rock Royal Coop. Inc., Rock Royal N.Y.	6	Food (Dairy)	Organic	None	N	New plant	Inactive
OQUOGA CREEK Dw 13							
Borden's Farm Products Co., Deposit, N.Y.	1	Food (Dairy)	Organic	None	N	Connect to municipal sewer system if built	Undetermined
Newark Milk & Cream Co., Deposit, N.Y.	1	Food (Dairy)	Organic	None	N	Connect to municipal sewer system if built	Undetermined
EAST BRANCH DELAWARE RIVER D 280							
Sheffield Farms, Inc., Halcottsville, N.Y.	60	Food (Dairy)	Organic	None	N	New plant	Inactive
Dairymen's League Coop. Assn., Margaretville, N.Y.	55	Food (Dairy)	Organic	None	N	Connect to municipal sewer system if built	Undetermined
TREMPER KILL De 42							
Andes Coop. Creamery, Andes, N.Y.	8	Food (Dairy)	Organic	Primary	N	Undetermined	-
BEAVER KILL De 16							
George I. Treyz Co., Horton, N.Y.	7	Chemical (Wood)	Organic	None	N	New plant	Inactive; business deteriorating
EQUINUNK CREEK D 272							
Dairymen's League Coop. Assn., Preston Twp., Wayne Co., Pa.	1	Food (Dairy)	Organic	Secondary	280 E	None	Treatment works completed in 1951

Stream Code: Dw - West Branch Delaware River (D-280); De - East Branch Delaware River (D-280)

TABLE 2 (Cont.)

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Degree of Treatment	P.E.(BOD) Discharged to Watercourse	Pollution Abatement Needs	Status, Remarks
TRIB. TO EAST BRANCH, CALICOON CREEK	Ce 15						
Breakstone Bros., Inc., Youngsville, N.Y.	1	Food (Dairy)	Organic	Primary	N	Undetermined	-
HUST POND BROOK	Ce 11						
Sullivan Co. Coop. Assn., Jeffersonville, N.Y.	1	Food (Dairy)	Organic	Primary	N	Undetermined	-
LACKAWAXEN RIVER	D 230						
Birdsall Bros. Co. Texas Twp., Wayne Co., Pa.	23	Textile	Organic	Primary	200 E	Additions	Under Sanitary Water Board orders; active planning
Clemo Milk Products Co., Honesdale, Pa.	22	Food (Dairy)	Organic	None	N	Connect to municipal sewer system	Agreement reached for discharge to Honesdale sewer system
Dairymen's League Coop. Assn., Honesdale, Pa.	22	Food (Dairy)	Organic	None	N	Connect to municipal sewer system	Agreement reached for discharge to Honesdale sewer system
SOUTH FORK WALLENPAUPACK CREEK	La 16						
Dairymen's League Coop. Assn., Dreher Twp., Wayne Co., Pa.	30	Food (Dairy)	Organic	Secondary	46 E	None	Treatment works completed in 1953

NEVERSINK RIVER D 206							
Van Inwegen Farm R.D. Port Jervis, N.Y.	3	Food (Dairy)	Organic	None	N	New plant	Inactive
TRIB. TO BUSHKILL CREEK Bh 4							
Camp Tamament, Lehman Twp., Pike Co., Pa.	2	Misc. (Laundry)	Organic	Secondary	N	None	Treatment works completed in 1949
BRODHEAD CREEK D 164							
Empire Box Co., Smithfield Twp., Monroe Co., Pa.	2	Paper	Organic	Secondary	500 E	None	Treatment works completed in 1951
McMICHAELS CREEK Br 3							
Monroe Dairy Stroudsburg, Pa.	1	Food (Dairy)	Organic	None	N	Connect to municipal sewer system	Agreement to discharge to Stroudsburg sewer system; sewers to be built in 1954
POCONO CREEK Mc 1							
Monroe Silk Mills Stroudsburg, Pa.	1	Textile	Organic	Secondary	N	None	Treatment works completed in 1950; intermittent discharge
PAULINS KILL D 159							
Sussex Milk & Cream Co., Freylinghuysen Twp., N.J.	23	Food (Dairy)	Organic	Aerobic Digestion	10	None	Treatment works completed in 1953
Remington Rand Corp. Newton, N.J.	21	Misc.	Organic	None	63	None	-

Stream Code: Ce - East Branch Callicoon Creek (C-1); C - Callicoon Creek (D-256); La - Lackawaxen River (D-230); Bh - Bushkill Creek (D-179); Br - Brodhead Creek (D-164); Mc - McMichaels Creek (Br-3).

TABLE 2 (Cont.)

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Degree of Treatment	P.E. (BOD) Discharged to Watercourse	Pollution Abatement Needs	Status, Remarks
Anken Chemical & Film Corp., Newton, N.J.	21	Chemical	Organic	None	378	None	-
Sussex Milk & Cream Co., Branchville, N.J.	17	Food (Dairy)	Organic	Aerobic Digestion	N	None	Treatment works completed in 1953. Good housekeeping methods practiced.
Henry Becker & Sons Frankford Twp., N.J.	16	Food (Dairy)	Organic	Minor	N	Undetermined	
Sussex Milk & Cream Co., Stillwater, N.J.	11	Food (Dairy)	Organic	None	280	New plant	Final plans approved
Payne Cutlery Corp. Blairstown, N.J.	7	Fabricated Metals	Organic	None	21	None	-
Blair Academy Laundry, Blairstown, N.J.	7	Misc. (Laundry)	Organic	None	N	New plant	Final plans approved
PEQUEST RIVER D 150							
Sussex Milk & Cream Co., Tranquility, N.J.	16	Food (Dairy)	Organic	None	85	New plant	Final plans approved
OXFORD BROOK P 6							
Oxwall Products Mfg. Co., Oxford, N.J.	3	Misc.	San. Sewage Organic	Minor	8	New plant	Under construction; 2 plants

MARTINS CREEK D 140							
Julius Kayser & Co., Bangor, Pa.	8	Textile	Organic	Secondary	2650 E	Enlargement	Active planning; connection proposed to Bangor sewer system
Blue Ridge Textile Co., Bangor, Pa.	8	Textile	Organic	Secondary	550 E	Connect to municipal sewer system	Active planning; connection proposed to Bangor sewer system
WALTZ CREEK Ma 4							
Bangor Mills, Inc., Pen Argyl, Pa.	3	Textile	Organic	Primary (Lagoons)	400 E	None	Treatment works completed in 1953
BUSHKILL CREEK D 136							
Stocker Bros. Dairy Forks Twp., Northampton Co., Pa.	6	Food (Dairy)	Organic	None	20 E	None	-
C. K. Williams Co., Easton, Pa.	1	Chemical	Inorganic	Secondary	N	None	Treatment works completed in 1953
LITTLE BUSHKILL CREEK Bc 1							
Stockertown Cheese Mfg. Co., Stockertown, Pa.	1	Food (Dairy)	Organic	Secondary	N	None	Negotiating to enter municipal sewer system when constructed
LEHIGH RIVER D 135							
Lehigh River Steam Coal Co., Lehigh Twp., Carbon Co., Pa.	50	Coal Products	Inorganic	Secondary	N	None	-

Stream Code: P - Pequest River (D-150); Ma - Martins Creek (D-140); Bc - Bushkill Creek (D-136)

TABLE 2 (Cont.)

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Degree of Treatment	P.E. (BOD) Discharged to Watercourse	Pollution Abatement Needs	Status, Remarks
Drifton Anthracite Co., Lower Towamensing Twp., Carbon Co., Pa.	34	Coal Products	Inorganic	Secondary	N	None	-
C. K. Williams Co. Washington Twp., Lehigh Co., Pa.	17	Chemical	Inorganic	Secondary	-	None	Treatment works completed in 1952
Eagle Brewing Co., Catasauqua, Pa.	15	Food (Brewery)	Organic	None	N	Connect to municipal sewer system	Agreement 1951 to enter Catasauqua sewer system
Lehigh Structural Steel Co., Allentown, Pa.	13	Fabricated Metals	Inorganic	Secondary	N	None	Treatment works completed in 1952
Forrest Piece Dye Works, Easton, Pa.	1	Textile	Organic	None	N	New plant	Referred to State legal department
AQUASHICOLA CREEK L 32							
Stoney Ridge Silica Co., Lower Towamensing Twp., Carbon Co., Pa.	6	Other Mining (Quarry)	Inorganic	Secondary	N	None	Treatment works completed in 1951
New Jersey Zinc Co. of Pa., East Plant, Palmerton, Pa.	2	Chemical	Inorganic	Secondary	N	None	Treatment works completed in 1952

TRIB. TO LITTLE LEHIGH RIVER L1 18							
Long Valley Rug Co. Longswamp Twp., Berks Co., Pa.	3	Textile	Organic	Secondary	N	None	Treatment works completed in 1950
JORDANS CREEK L1 1							
Trojan Powder Co., South Whitehall Twp., Lehigh Co., Pa.	6	Chemical	Organic	Secondary	N	None	Treatment works completed in 1952
MONOCACY CREEK L 10							
Reichard-Coulston Inc., Bethlehem, Pa.	1	Chemical	Inorganic	Secondary	N	None	Treatment works completed in 1952
Superior Metal Products Co., Bethlehem, Pa.	1	Fabricated Metals	Inorganic	None	N	Connect to municipal sewer system	Agreement to enter Bethlehem sewer system
SAUCON CREEK L 8							
New Jersey Zinc Co. of Pa., Upper Saucon Twp., Lehigh Co., Pa.	10	Other Mining	Inorganic	Secondary	N	None	Treatment works completed in 1953
Bethlehem Steel Co. Coke Oven Works, Bethlehem, Pa.	1	Coal Products	Inorganic	Secondary	N	None	Treatment works 95% completed in 1953

Stream Code: L - Lehigh River (D-135); L1 - Little Lehigh River (L-12)

TABLE 2 (Cont.)

Name and Location	River Mile Above Mouth	Type of Industry	Type Waste Produced	Degree of Treatment	P.E. (BOD) Discharged to Watercourse	Pollution Abatement Needs	Status, Remarks
Bethlehem Steel Co. Ore Roasting Plant Bethlehem, Pa.	1	Primary Metals	Inorganic	Secondary	N	None	Treatment works completed in 1953
POHATCONG CREEK D 129							
Sisco Bros., Inc., Broadway, N.J.	13	Food	Organic	None	22	None	Good housekeeping methods in practice
DURHAM CREEK D 127							
Durham Paper Board Co., Durham Twp., Bucks Co., Pa.	1	Paper	Organic	Intermediate	6000 E	Undetermined	Subject to inspection
MUSCONETCONG RIVER D 126							
Port Murray Creamery, Port Murray, N.J.	20	Food (Dairy)	Organic	Secondary	295	Enlargement	Under construction
Riegel Paper Corp. Warren Glen, N.J.	5	Paper	Organic	Primary	13,392	None	Treatment works completed in 1953. Active planning; design to be based on results from Warren Glen treatment process.
Riegel Paper Corp. Hughesville, N.J.	3	Paper	Organic	Minor	18,200	Additions	
BROCK CREEK D 94							
Cold Spring Bleachery, Yardley, Pa.	1	Textile	Organic	Intermediate	7,400 E	Additions	Under Sanitary Water Board order; active planning

GOLD RUN D 90							
Homasote Co., Ewing Twp., N.J.	2	Paper	Organic	Secondary	200	None	Additions completed in 1952
ASSUNPINK CREEK D 86							
American Radiator & Standard Sanitary Corp., Hamilton Twp., N.J.	4	Fabricated Metals	San. Sewage Organic	Secondary	N	None	-
Sloane Blabon Co. Hamilton Twp., N.J.	4	Misc. (Linoleum)	Organic	Secondary	N	None	Additions completed in 1951

APPENDIX A

DELAWARE RIVER BASIN - ZONE 1

Population Data

County and State	Total Area (Square Miles)	Part of Area in Basin (Square Miles)	Total Population 1950	Estimated Population in Basin 1950	Percent Increase in Basin Population 1940 - 1950
New Jersey					
Hunterdon	435	188	42,736	17,230	9.1
Mercer	228	120	229,781	46,070	42.7
Monmouth	477	10	225,327	1,149	11.7
Morris	468	38	164,371	7,534	25.9
Sussex	528	293	34,423	18,287	19.9
Warren	361	361	54,374	54,374	8.4
Total - New Jersey	-	1,010	-	144,644	20.0
New York					
Broome	710	85	184,698	2,082	-2.4
Chenango	908	10	39,138	205	10.8
Delaware	1,470	1,165	44,420	33,554	11.2
Greene	653	19	28,745	195	-10.6
Orange	829	75	152,255	12,654	0.5
Schoharie	625	15	22,703	82	-3.5
Sullivan	986	884	40,731	39,795	7.5
Ulster	1,143	150	92,621	1,425	-0.1
Total - New York	-	2,403	-	89,992	7.3
Pennsylvania					
Berks	864	24	255,740	4,164	8.2
Bucks	617	280	144,620	31,184	19.9
Carbon	405	394	57,558	52,634	-6.6
Lackawanna	454	80	257,396	2,062	-7.3
Lehigh	347	262	198,207	192,832	11.7
Luzerne	891	130	392,241	47,342	-7.2
Monroe	611	611	33,773	33,773	13.3
Northampton	374	374	185,243	185,243	9.6
Pike	545	545	8,425	8,425	13.1
Schuylkill	783	48	200,577	3,350	5.0
Wayne	744	691	28,478	27,060	-0.5
Total - Pennsylvania	-	3,439	-	588,069	6.9
Total - Zone 1	-	6,852	-	822,705	9.1

APPENDIX B

DELAWARE RIVER BASIN - ZONE 1

Public Water Supply Data

Municipality	Source of Supply	Owner	Pop. 1950	Est. Pop. Served 1949	Av. Plant Output M.G.D. 1949	Treatment	Remarks
New Jersey							
Alpha Twp.	Well	M	2,117	1,500	-	Chlorination	-
Andover	Well	M	560	500	.023	None	-
Belvidere	Surface, Well, Spring	P	2,406	2,195	.22	Chlorination	Buckhorn Creek
Blairstown Twp.	Well	P	1,571	1,000	.09	Chlorination	-
Bloomsbury	Spring	M	722	800	.07	Filtration, Chl.	-
Branchville	Surface, Spring	M	810	670	.012	Chlorination	Dry Brook
Byram Twp.	Well	P	761	S-160	.003	None	Summer only
Ewing Twp. Crestmont Park Section	Well	P	-	120	.012	None	-
Frenchtown	Well	P	1,305	1,240	.15	Chlorination	-
Hackettstown	Surface, Well	M	3,894	3,000	.40	Filtration, Chl.	Mine Mill Brook

*Abbreviations Used: MGD - Million Gallons per day, M - Municipal, P - Private, Chl. - Chlorination
Est. Pop. - Estimated Population

Source - Inventory of Water & Sewage Facilities 1949 Public Health Service

APPENDIX B

DELAWARE RIVER BASIN - ZONE 1

Public Water Supply Data

Municipality	Source of Supply	Owner	Pop. 1950	Est. Pop. Served 1949	Av. Plant Output M.G.D. 1949	Treatment	Remarks
Hampton	Surface, Well, Spring	P	975	900	.078	Chlorination	Rocky Run
Hopatcong	Well	P	1,173	S-200	.002	None	Summer only
Hopewell	Well	M	2,365	1,500	.06	Chlorination	-
Lambertville	Surface	P	4,477	4,520	1.0	Filtration, Chl.	Swan Creek
Lopatcong	Surface	P	1,737	-	-	Chlorination	Merrill Brook
Milford	Well	M	1,012	500	.05	Chlorination	-
Newton (a)	Surface	M	5,781	5,630	.47	Chlorination	Morris Lake
Oxford Twp.	Spring	P	1,489	200	.002	Chlorination	-
Pennington	Well, Spring	M	1,682	1,500	.083	Chlorination	-
Phillipsburg (b)	Spring	P	18,919	20,560	1.5	Chlorination	-
Roosevelt	Well	M	720	490	.42	Filtration	-
Stanhope	Well	M	1,351	1,100	.225	None	-
Washington	Surface	P	4,802	4,645	.40	Chlorination	Roaring Rock Brook

(a) Also serves part of Sparta Twp.
(b) Also serves parts of Lopatcong Twp. and Pohatcong Twp.

New York

Afton	Spring	M	2,047	805	.07	None	-
Andes	Spring	P	430	390	.075	None	-
Bovina Center	Surface	P	711	200	.01	Chlorination	Coulter Brook
Callicoon	Spring	P	2,134	900	.10	None	-
Delhi	Surface	M	2,223	1,745	.50	Filtration, Chl.	Steele Brook
Deposit	Surface, Well	P	2,016	2,030	.68	Filtration, Chl.	Big Hollow Brook; Aux. well supply
Downsville	Well, Spring	M	720	530	.05	None	-
Fleischmanns	Spring, Well	M	469	S-4,500	.13	Chlorination	Wells only
Hancock	Surface	P	1,560	1,200	.125	Chlorination	Bear Brook
Hobart	Surface	P	618	625	.187	Filtration, Chl.	-
Jeffersonville	Surface	M	450	500	.08	Chlorination	Lcikell Creek
Liberty (c)	Surface	M	4,658	S-15,000	.80	Chlorination	Lily Pond
Margaretville	Well, Spring	M	905	810	.08	Chlorination	Springs only
Monticello	Surface	M	4,223	S-12,000	.45	Chlorination	Kiamesha Lake
Otisville	Surface	M	911	700	.42	Filtration, Chl.	Bear Swamp Lake
Port Jervis	Surface	M	9,372	9,750	3.0	Chlorination	-
Roxbury W.D.	Spring	M	-	500	.075	None	-

(c) Also serves Ferndale W. D. and Swan Lake W. D.

APPENDIX B (Cont.)

Municipality	Source of Supply	Owner	Pop. 1950	Est. Pop. Served 1949	Av. Plant Output M.G.D. 1949	Treatment	Remarks
Stamford	Surface, Well	M	1,162	1,090	1.4	Filtration, Chl.	W. Br. Delaware River
Walton	Surface, Spring	P	3,947	3,600	1.75	Filtration, Chl.	-
Windsor	Surface, Well	M	2,974	765	.05	Chlorination	-
Woodburne Prison	Well	M	-	375	-	Chlorination	-
Woodridge	Surface	M	951	S-2000	.15	Chlorination	East Pond
Wurtsboro	Surface, Well	M	628	S-750	.05	Chlorination	-
Pennsylvania							
Alburtis	Surface	M	979	885	1.052	Chlorination	E. Br. Swope Creek
Allentown	Surface, Well, Spring	M	106,756	97,000	22.0	Filtration, Chl.	Little Lehigh River
Bangor (d)	Surface, Spring	P	6,050	8,800	1.0	Chlorination	-
Bath	Well, Spring	M	1,824	1,720	.15	Chlorination	-
Beaver Meadow	Well, Spring	P	1,723	2,030	.09	None	-
Bethlehem (e)	Surface, Well	M	66,340	63,000	20.0	Filtration, Chl.	Lehigh R. & Wild Cr.
Bethlehem Twp. (f)	Well	P	-	-	-	None	-

(d) Also serves Roseto, Upper Mt. Bethel Twp. and Washington Twp.
(e) Also serves Fountain Hill
(f) Also serves Freemansburg

Catasauqua	Well	M	4,923	4,765	.78	Chlorination	-
Coopersburg	Well, Spring	M	1,462	1,190	.05	None	-
Delaware Water Gap	Surface, Well	P	734	S-2000	.20	Chlorination	Caldeno Creek
Dingman's Ferry	Spring	P	-	S-700	.05	None	-
East Bangor	Well	P	988	1,000	.05	None	-
East Mauch Chunk	Surface, Well	P	3,132	-	.20	Chlorination	-
Easton (g)	Surface, Well, Spring	M	35,632	55,000	3.4	Filtration, Chl.	Delaware River
East Stroudsburg	Surface	M	7,274	6,500	.70	Chlorination	Sambo Creek
Emmaus	Surface, Well, Spring	M	7,780	6,700	.37	Chlorination	Salt Run
Freeland	Well	P	5,909	11,000	.50	Chlorination	-
Hawley	Surface, Well, Spring	P	1,602	1,800	.20	Chlorination	-
Hazleton (h)	Surface	M	35,491	50,000	5.6	Chlorination	-
Hellertown	Well, Spring	M	5,435	4,030	.50	Filtration, Chl.	-
Honesdale	Surface	P	5,662	S-7,000	.60	Chlorination	Ponds
Lansford (i)	Surface	P	7,487	25,000	1.4	Chlorination	Bear and Still Cr.
Lehighton (j)	Surface	P	6,565	7,500	.70	Chlorination	-
Lower Saucon Twp.	Well, Spring	P	4,506	150	.020	None	-

(g) Also serves Forks Twp., Glendon Palmer Twp., West Easton, Williams Twp., Wilson
(h) Also serves Delano, Harwood, Jamestown, Junedale, Lattimer, Leviston, Milnesville, Park Place, Stockton, West Hazleton, Weston
(i) Also serves Coaldale, Nesquehoning, New Columbus, Mauch Chunk Twp., Rahn Twp.
(j) Also serves Weissport.

APPENDIX B (Cont.)

Municipality	Source of Supply	Owner	Pop. 1950	Est. Pop. Served 1949	Av. Plant Output M.G.D. 1949	Treatment	Remarks
Macungie	Spring	P	983	855	-	None	-
Matamoras	Well	M	1,761	1,200	.37	None	-
Mauch Chunk Boro (k)	Well, Spring	P	2,859	800	.20	Chlorination	-
Mauch Chunk Twp.	Well, Spring	P	5,081	2,300	.08	Chlorination	-
Mt. Pocono	Spring	P	619	S-1400	.225	None	-
Nazareth (1)	Surface	P	5,830	11,000	1.0	Chlorination	-
Northampton (m)	Surface	M	9,332	27,000	2.0	Filtration, Chl.	Mill Creek and Lehigh River
Palmerton	Well	P	6,646	7,475	.33	Chlorination	-
Pen Argyl	Surface	P	3,878	4,060	.40	None	-
Pocono Lake Preserve	Well	P	-	S-400	.025	None	-
Pocono Manor	Well	P	-	S-1,000	.166	None	-
Portland	Surface	M	551	750	.10	Chlorination	-
Quakertown	Well	M	5,673	5,150	.90	Chlorination	-

(k) Also serves East Mauch Chunk
(l) Also serves Stockerton, Tatamy, Wind Gap
(m) Also serves Catasauqua (part), Cementon, Coplay, East Catasauqua, Egypt, Fullerton, Hokendaugua, Hanover Twp. (part), North Catasauqua, Siegfried, West Catasauqua, West Coplay

Richlandtown	Well	M	762	630	.335	Chlorination	-
Slatington	Surface, Spring	M	4,343	4,200	.40	Chlorination	-
Stroudsburg	Spring	M	6,361	7,000	1.0	Chlorination	-
Topton	Well, Spring	M	1,568	1,200	.10	Chlorination	-
Trumbauersville	Well	M	838	745	.010	Chlorination	-
Walnutport	Surface, Well	M	1,427	1,270	.10	Chlorination	-
Waymart	Well, Spring	P	1,068	1,095	.028	Chlorination	-
Weatherly	Surface	P	2,622	2,750	.130	Chlorination	Penrose Creek and Ships Run
White Haven	Surface, Spring	P	1,461	1,600	.10	Chlorination	Linesville Creek water chlorinated
Yardley	Well	P	1,916	1,460	.122	Chlorination	-

APPENDIX B

DELAWARE RIVER BASIN - ZONE 1

Public Water Supply Data*

Summary

Source of Supply	No. of Water Systems	Ownership		Est. Pop. Served 1949	Av. Plant Output M.G.D. 1949	Treatment		
		Mun.	Private			Filt.	Chlor.	None
New Jersey								
Surface (a)	8	3	5	21,560	2.58	2	6	-
Underground	15	8	7	31,370	2.69	2	8	5
Total - N.J.	23	11	12	52,930	5.27	4	14	5
New York								
Surface (a)	15	10	5	51,955	9.65	6	9	-
Underground	8	6	2	8,860	0.58	-	1	7
Total - N.Y.	23	16	7	60,815	10.23	6	10	7
Pennsylvania								
Surface (a)	22	11	11	383,815	61.65	4	17	1
Underground	25	10	15	59,295	6.08	1	13	11
Total - Pa.	47	21	26	443,110	67.73	5	30	12
Zone 1								
Surface	45	24	21	457,330	73.88	12	32	1
Underground	48	24	24	99,525	9.35	3	22	23
Total - Zone 1	93	48	45	556,855	83.23	15	54	24

(a) Includes supplies which are partially surface and underground

* New York City supply not included. Additional supply of 440 M.G.D. to be drawn from Delaware watershed (105 M.G.D. from Neversink River and 335 M.G.D. from East Branch Delaware River) by 1956.

APPENDIX C

DELAWARE RIVER BASIN - ZONE 1

Summary of U. S. Geological Survey Stream Flow Records

Gaging Station	Years of Record	Drainage Area Above Gaging Station, Square Miles	Average Daily Discharge, C.F.S.	Maximum Discharge		Minimum Discharge	
				Date	Flow, C.F.S.	Date	Flow, C.F.S.
East Branch Delaware River at Margaretville, N.Y.	1937-50 (13 years)	163	299	9/21/38	13,200	8/8/49	6.0
East Branch Delaware River at Downsville, N.Y.	1941-50 (9 years)	373	-	3/22/48	22,000	8/28/49	19.0
East Branch Delaware River at Harvard, N.Y.	1934-50 (16 years)	443	858	9/22/38	31,400	8/28/49	27
East Branch Delaware River at Fishs Eddy, N.Y.	1912-50 (38 years)	783	-	8/24/33 10/9/03	53,300 70,000 E	8/28/49	67
Delaware River above Lackawaxen River near Barryville, N.Y.	1940-50 (10 years)	2,023	3,746	5/23/42	105,000	9/30/43	149
Delaware River at Port Jervis, N.Y.	1904-50 (46 years)	3,076	5,532	5/23/42 10/10/03	140,000 205,000	9/23/08	175
Delaware River at Montague, N.J.	1940-50 (10 years)	3,480	6,402	5/23/42 3/18/36	136,500 164,500	9/27/43	428

APPENDIX C

DELAWARE RIVER BASIN - ZONE 1

Summary of U. S. Geological Survey Stream Flow Records

Gaging Station	Years of Record	Drainage Area Above Gaging Station, Square Miles	Average Daily Discharge, C.F.S.	Maximum Discharge		Minimum Discharge	
				Date	Flow, C.F.S.	Date	Flow, C.F.S.
Delaware River at Belvidere, N.J.	1922-50 (28 years)	4,535	8,121	10/10/03 3/19/36	220,000 179,000	9/28/29	609
Delaware River at Riegelsville, N.J.	1906-50 (44 years)	6,328	11,120	10/10/03 3/19/36	275,000 E 210,000	9/20/08	870
Delaware River at Trenton, N.J.	1913-50 (37 years)	6,780	11,770	3/19/36	227,000	9/18&19/32	1,220
Lehigh River at Stoddartsville, Pa.	1943-50 (7 years)	91.7	-	7/8/47 5/22/42	4,760 9,800	10/10,12 & 14/44	15
Lehigh River at Tannery, Pa.	1919-21 1928-50 (24 years)	322	651	5/22/42	29,600	8/5/36	7.2
Lehigh River at Walnutport, Pa.	1946-50 (4 years)	889	-	7/8/47	23,000	11/2/48	236
Lehigh River at Bethlehem, Pa.	1902-05 1909-13 1918-21 1928-50 (32 years)	1,279	2,272 (1929-50)	5/23/42	92,000	10/15/10	160
Platte Kill at Dunraven, N.Y.	1941-50 (9 years)	34.7	-	3/22/48	3,240	9/26/43	0.9

Mill Brook at Arena, N.Y.	1937-50 (13 years)	25.0	56.2	9/21/38	4,500	9/25&26/39	1.2
Tremper Kill near Shavertown, N.Y.	1937-50 (13 years)	33.0	60.5	9/21/38	4,250	10/1/43	
Terry Clove Kill near Pepecton, N.Y.	1937-50 (13 years)	14.1	26.1	5/23/42	4,010	8/27 & 29/49 Many days Aug. & Sept. 1939	1.0 0.3
Coles Clove Kill near Pepecton, N.Y.	1944-50 (6 years)	28.0	-	3/22/48	2,400	8/28/49	0.4
Beaver Kill near Turnwood, N.Y.	1948-50 (2 years)	40.8	-	7/11/50	3,220	8/24/49	4.4
Beaver Kill at Craigie Claire, N.Y.	1937-50 (13 years)	82	203	9/27/42	10,300	8/28/49	8.4
Beaver Kill at Cooks Falls, N.Y.	1913-50 (36 years)	241	560	3/18/36	21,300	9/14-16/13	23
Willowemoc Creek at Debruce, N.Y.	1948-50 (2 years)	40.9	40.9	12/30/48	3,150	10/5/48	7.3
Willowemoc Creek near Livingston Manor, N.Y.	1937-50 (13 years)	63	151	8/11/38	6,200	9/22/41	10
Little Beaver Kill near Livingston Manor, N.Y.	1924-50 (26 years)	19.8	45.5	8/26/28	2,500	8/1,3,5/36	1.0
West Branch Delaware River at Delhi, N.Y.	1937-50 (13 years)	142	235	9/21/38	8,940	8/28/49	4.1

APPENDIX C (Cont.)

Gaging Station	Years of Record	Drainage Area Above Gaging Station, Square Miles	Average Daily Discharge, C.F.S.	Maximum Discharge Date	Maximum Discharge Flow, C.F.S.	Minimum Discharge Date	Minimum Discharge Flow, C.F.S.
West Branch Delaware River at Hale Eddy, N.Y.	1912-50 (38 years)	593	1,060 (1913-50)	10/10/03 3/22/48	46,000 Approx. 28,900	8/4/36	32
Little Delaware River near Delhi, N.Y.	1937-50 (13 years)	49.8	89.7	9/21/38	3,280	8/27/49	1.0
Trout Creek at Cannonsville, N.Y.	1940-50 (10 years)	49.5	87.0	3/22/48	4,600	9/27,29/43 10/1/43	2.4
Cold Spring Brook at China, N.Y.	1934-50 (16 years)	1.51	2.67 (1935-50)	10/30/35	335	8/13/44	0.007
Oquaga Creek at Deposit, N.Y.	1940-50 (10 years)	66	113	3/22/48	4,400	9/11/44	1.2
Callicoon Creek at Callicoon, N.Y.	1940-50 (10 years)	111	177	8/17/47	16,000	9/11,12/44	5.4
Tenmile River at Tusten, N.Y.	1946-50 (4 years)	45.0	-	4/5/47	1,440	10/4,6/48	3.5
Lackawaxen River at Prompton, Pa.	1944-50 (6 years)	59.7	-	4/5/47	5,230	9/9/44	4.4
Lackawaxen River near Honesdale, Pa.	1948-50 (2 years)	164	-	12/30/48	5,270	8/27&28/49	20.
Lackawaxen River at Hawley, Pa.	1909-12 1913-17 1938-50 (19 years.	290	467	5/23/42	50,000	8/20/11	7.

Dyberry Creek at Dyberry, Pa.	1943-50 (7 years)	63.2	-	4/5/47	3,920	9/9&10/44	2.5
Middle Creek near Hawley, Pa.	1944-50 (6 years)	78.4	-	4/5/47	6,000	9/11&12/44	3.6
Neversink River at Claryville, N.Y.	1949-50 (1 year)	61.1	-	4/4/50	2,450	8/27,28,29/49	13
Neversink River at Neversink, N.Y.	1941-50 (9 years)	93	-	12/24/41	14,000	8/25/49	14
Neversink River at Woodbourne, N.Y.	1937-50 (13 years)	113	275 (1938-50)	7/22/38	12,300	8/25,27,28/49	17
Neversink River at Oakland Valley, N.Y.	1928-50 (22 years)	222	462	8/24/33	20,000	Many days	30
Neversink River at Godeffroy, N.Y.	1903 1909-14 1937-50 (19 years)	302	604 (1937-50)	7/22/38	16,100	7/21/11	Practically None
Bushkill Creek at Shoemakers, Pa.	1908-15 1920-50 (37 years)	117	231	7/24/20	3,910	9/21,26/32	4.
Flat Brook near Flatbrookville, N.Y.	1923-50 (27 years)	65.1	108	4/7/24	3,470	9/6&7/23	4.
Paulins Kill at Blairstown, N.J.	1921-50 (29 years)	126	188	9/22/38	4,480	8/13&14/30	5.
Pequest River at Huntsville, N.J.	1939-50 (11 years)	31.4	43.1	7/20/45	596	8/23/49	1.6

APPENDIX C (Cont.)

Gaging Station	Years of Record	Drainage Area Above Gaging Station, Square Miles	Average Daily Discharge, C.F.S.	Maximum Discharge		Minimum Discharge	
				Date	Flow, C.F.S.	Date	Flow, C.F.S.
Pequest River at Pequest, N.J.	1921-50 (29 years)	108	148	3/14/36	1,810	9/11/44	15.0
Beaver Brook near Belvidere, N.J.	1922-50 (28 years)	36.2	51.5	3/12/36	1,510	9/7,8&11/44	1.2
Dilldown Creek near Long Pond, Pa.	1948-50 (2 years)	2.39	-	3/28/50	91	10/16/48	0.54
Pohopoco Creek near Parryville, Pa.	1940-50 (10 years)	109	221	5/23/42	5,300	9/29/43	23.
Wild Creek at Hatchery, Pa.	1941-50 (9 years)	16.8	-	5/23/42	1,250	9/28/43	5.5
Aquashicola Creek at Palmerton, Pa.	1939-50 (11 years)	76.7	156	7/10/45	11,700	9/30/41	13
Little Lehigh Creek near Allentown, Pa.	1945-50 (5 years)	80.8	-	8/18/46	1,300	2/13&14/48	43
Jordan Creek at Allentown, Pa.	1944-50 (6 years)	75.8	-	5/26/47	2,380	8/15/46	2.5
Monocacy R. at Bethlehem, Pa.	1948-50 (2 years)	44.5	-	7/10/45 12/31/48	5,200 354	Many days 1949	18

Saucon Creek at Lanark, Pa.	1948-50 (2 years)	12.0	-	5/13/48	530	Many days	2.2
Saucon Creek at Friedensville, Pa.	1948-50 (2 years)	26.6	-	5/13/48	1,040	9/26/50	6.4
South Branch Saucon Creek at Friedensville, Pa.	1948-50 (2 years)	10.6	-	5/13/48	682	9/3/49	3.1
Musconetcong River at outlet of Lake Hopatcong, N.J.	1928-50 (22 years)	25.6	43.3	3/19/36	534	Many days Mar. 1940	0.1
Musconetcong River near Hackettstown, N.J.	1921-50 (29 years)	70.0	116.	3/12/36	1,430	7/8/27	2.
Musconetcong River near Bloomsbury, N.J.	1903-1907 1921-1950 (33 years)	143	224 (1921-50)	3/15/40	3,650	8/26/32	13.
Tohickon Creek near Pipersville, Pa.	1935-50 (15 years)	97.4	140	8/9/42	13,700	9/29/41	0.005
Assunpink Creek at Trenton, N.J.	1923-50 (27 years)	89.4	117	9/22/38	3,320	8/21/31 10/22/31	1.0

APPENDIX D

DELAWARE RIVER BASIN - ZONE 1

WATER ANALYSES*

Sampling Station	Date	Dissolved Oxygen ppm	Dissolved Oxygen % Sat.	B.O.D. ppm
Lackawaxen River at Hawley, Pa.	1949 July 28	8.4	101.5	2.1
	Aug. 16	7.8	94.0	0.8
	Sep. 20	8.2	83.5	2.1
Lackawaxen River near Rowlands, Pa.	1949 July 28	8.0	91.0	2.7
	Aug. 16	8.6	93.8	3.2
	Sep. 20	9.2	92.6	0.2
Lehigh River near Tannery, Pa.	1949 July 28	8.2	101.	0.6
	Aug. 16	8.6	98.7	2.2
	Sep. 20	9.0	96.0	1.1
Lehigh River near Easton, Pa.	1949 July 28	6.0	80.0	0.3
	Aug. 16	6.2	74.9	0
	Sep. 20	6.4	72.1	1.5
Delaware River near Atco, Pa.	1949 July 28	6.0	75.0	2.3
	Aug. 16	7.2	82.9	0.4
	Sep. 20	7.4	78.0	1.1
Delaware River at Easton, Pa.	1949 July 28	7.6	96.0	1.3
	Aug. 16	8.2	99.0	0.4
	Sep. 20	8.4	91.6	0.5
Broadheads Creek below Stroudsburg, Pa.	1949 July 28	7.8	98.0	0.6
	Aug. 16	8.0	92.7	3.4
	Sep. 20	9.4	102.1	3.3
Shohola Creek near Shohola, Pa.	1949 July 28	7.4	89.0	3.7
	Aug. 16	8.4	93.5	0
	Sep. 20	8.8	87.6	2.3
Pequest River at Pequest, N.J.	1949 July 28	11.52	131.	1.9
	Aug. 16	10.84	116	0.5
	Sep. 20	10.24	101.7	1.4
Paulins Kill at Blairstown, N.J.	1949 July 28	8.77	110	1.5
	Aug. 16	10.04	118	2.3
	Sep. 20	10.22	111.5	2.9
Musconetcong Creek near Bloomsburg, N.J.	1949 July 28	13.80	165	4.7
	Aug. 16	11.46	129	1.2
	Sep. 20	10.58	109.0	1.7

APPENDIX D (Cont.)

Sampling Station	Date	Dissolved Oxygen ppm	Dissolved Oxygen % Sat.	B.O.D. ppm
Flat Brook near Flatbrookville, N.J.	1949 July 28	10.86	128	2.2
	Aug. 16	10.64	117	0.9
	Sep. 20	9.66	97.3	0.8
Beaver Brook near Belvidere, N.J.	1949 July 28	12.46	150.	2.5
	Aug. 16	10.74	121	2.1
	Sep. 20	10.48	107.1	1.5

Stream	Date	Alkalinity as Ca CO_3 ppm	pH	Hardness as Ca CO_3 ppm	Turbidity
Delaware River at Easton, Pa.	July 1951	-	8.6	54	0.2
Delaware River at Trenton, N.J.	1952	Av. - 31 Max.- 61 Min.- 9	Av. - 7.3 Max.- 8.3 Min.- 6.7	-	Av. - 30 Max.-500 Min.- 3
Little Lehigh River at Allentown, Pa.	6-28-51	-	8.1	155	-
Wild Creek, 27 miles north of Bethlehem, Pa.	5-23-51	-	6.0	15	3.6

*From "Report on the Utilization of the Waters of the Delaware River Basin" prepared by Malcolm Pirnie Engineers - Albright & Friel, Inc., for the Interstate Commission on the Delaware River Basin, and "The Industrial Utility of Public Water Supplies in the Middle Atlantic States, 1952" - Geological Survey Circular 283.

APPENDIX E

DECREE OF THE SUPREME COURT OF THE UNITED STATES IN THE DELAWARE RIVER DIVERSION CASE

No. 16 Original. October Term 1930

State of New Jersey, Complainant
vs.
State of New York and City of New York
Defendants,
COMMONWEALTH OF PENNSYLVANIA,
Intervenor

(DECREE)

(May 25, 1931)

This cause came on to be heard by this court upon the exceptions filed by the complainant and defendants to the report of Special Master, and was argued by counsel for the States of New Jersey, New York, Pennsylvania, and the City of New York.

On consideration whereof, it is now here ordered, adjudged, and decreed by this Court, as follows:

1. That the injunction prayed for by the State of New Jersey so far as it would restrain the State of New York or City of New York for diverting from the Delaware River or its tributaries to the New York City water supply the equivalent of 440 million gallons of water daily be, and the same is hereby, denied, but is granted to restrain the said State and City from diverting water in excess of that amount. The denial of the injunction as above is subject to the following conditions:

   a. Before any diversion shall be made an efficient plant for the treatment of sewage at Port Jervis, New York shall be constructed and the sewage of Port Jervis entering the Delaware or Neversink Rivers shall be treated to such an extent as to effect a reduction of 85% in the organic impurities. And the effluent from such plant shall be treated with a chemical germicide, or otherwise, so that the B. Coli originally present in the sewage shall be reduced by 90%.

   Untreated industrial waste from plants in said town of Port Jervis shall not be allowed to enter the Delaware or Neversink Rivers, and the treatment of such industrial wastes shall be such as to render the effluent practically free from suspended matter and non-putrescent; and said treatment of sewage and industrial waste shall be maintained so long as any diversion is made from the Delaware River or its tributaries.

b. At any time the stage of the Delaware River falls below .50 c.s.m. at Port Jervis, New York, or Trenton, New Jersey, or both (.50 c.s.m. being equivalent to a flow of 1,535 c.f.s. at Port Jervis and 3,400 c.f.s. at Trenton), water shall be released from one or more of the impounding reservoirs of New York City in sufficient volume to restore the flow at Port Jervis and Trenton to .50 c.s.m., provided, however, that there is not required to be released at any time water in excess of 30% of the diversion area yield, and the diversion area yield having been ascertained to be 2.2 c.s.m., the maximum release required shall be 30% of that amount, or .66 cubic feet per second per square mile of the areas from which water is diverted.

In determining the quantity of water to be released so as to add to the flow of the Delaware River, the Neversink River shall be treated as if it flowed into the Delaware River above Port Jervis, and the number of second feet of water released from the impounding reservoir on the Neversink River shall be added to the number of second feet of water released from other reservoirs, so as to determine whether the quantity of water, required by this decree to be released, has been released.

c. That the State of New Jersey and the Commonwealth of Pennsylvania, through accredited representatives, shall at all reasonable times have the right to inspect the dams, reservoirs and other works constructed by the City of New York and to inspect the diversion areas and the inflow, outflow and diverted flow of said areas, and to inspect the meters and other apparatus installed by the City of New York and to inspect all records pertaining to inflow, outflow and diverted flow.

2. The Diversion herein allowed shall not constitute a prior appropriation and shall not give the State of New York and City of New York any superiority of right over the State of New Jersey and Commonwealth of Pennsylvania in the enjoyment and use of the Delaware River and its tributaries.

3. The prayer of the intervenor, Commonwealth of Pennsylvania, for the present allocation to it of the 750 million gallons of water daily from the Delaware River or its Pennsylvania tributaries is denied without prejudice.

4. The prayer of the Commonwealth of Pennsylvania for the appointment of a river master is denied without prejudice.

5. This decree is without prejudice to the United States and particularly is subject to the paramount authority of Congress in respect to navigation and navigable waters of the United States, and subject to the powers of the Secretary of War and Chief of Engineers of the United States Army in respect to navigation and navigable waters of the United States.

6. Any of the parties hereto, complainant, defendants or intervenor, may apply at the foot of this decree for other or further action or relief and this Court retains jurisdiction of the suit for the purpose of any order or direction or modification of this decree, or any supplemental decree that it may deem at any time to be proper in relation to the subject matter in controversy.

7. The costs of the cause shall be divided and shall be paid by the parties in the following proportions: State of New Jersey 35 per cent, City of New York 35 per cent, State of New York 15 per cent, Commonwealth of Pennsylvania 15 per cent.

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